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Hunterian Oration

ON

HUNTER'S IDEALS AND LISTER'S PRACTICE.

Delivered at the Royal College of Surgeons of England on Feb. 14th, 1927,

BY SIR BERKELEY MOYNIHAN, BART., K.C.M.G., C.B., M.S.LOND.,
PRESIDENT OF THE COLLEGE.

ON this day, the 199th anniversary of his birth, we commemorate the services of John Hunter to the Science and the Art of Surgery. In this year we celebrate the centenary of the birth of Lister. Hunter and Lister! From all who have ever served the cause of surgery these two stand apart by reason of the immeasurable gifts which they have conferred upon their fellow men. May we now recall something of Hunter's work and of his ideals in respect of the conquest of disease which the genius of Lister made possible?

Man's life is warfare. The individual, the whole race, is beset by foes, unresting, relentless. Against them our defence, if we are ever to subdue them, must be carefully planned and diligently strengthened. But defence, however stubborn, is not enough. Attacks designed after scientific study of the enemy strongholds and methods, and launched with impassioned zeal, must never for one instant falter. Not all our attacks meet with success. We are cheered when we gain some notable victory, yet when we suffer defeat, as wave after wave of our advance is checked and repulsed, we do not lose heart. Failure inspires us to fresh and still more eager endeavour.

In this year, the centenary of Lister, we rejoice to acclaim the greatest victory ever won by man against his enemies. We, who are in active work to-day, are perhaps unable to measure the full extent of that victory; for during the long fight, lasting almost exactly 60 years, our standards have been so changed that we cannot truthfully compare our work with that of our intellectual ancestors. Operations from time immemorial so mortal as to be prohibitive, are now freely performed without anxiety. Operations formerly unimaginable are now matters of everyday occurrence. The mere tale of such work done does not adequately illustrate the change. On my last day as surgeon, on the full staff of my hospital, I performed six abdominal operations. Not one of these was practised by any member of our staff during the year in which I became house surgeon, nor had such a diagnosis as was made in three of these cases, and verified at the time of operation, ever then been attempted in the history of medicine. Above all, a statement of facts and a comparison of methods does not in adequate degree convey to our minds the difference of outlook of the intellectual and spiritual approach of a man to his daily task, as between the surgeon in the days before Lister and since. It is barely possible for us to imagine how men felt about their daily work when an eminent surgeon could speak of his hospital as a "house of death"; when hospitals "were little short of pest houses," as Lister said;[1] and when the oppressive mortality compelled the closure of wards or of a whole hospital for months, until the curse was lifted from them.

BEFORE AND AFTER LISTER.

The change, of incalculable benefit to humanity, is due to one man, Lister.[2] Before Lister's time the surgeon dreaded the almost inevitable consequences of his operation. Lister made surgery so free from risk that we now may say that, with due care in the detailed application of the lessons learnt from him, it is no longer the fatality of the operation itself which is feared. In these days when a patient dies it is not because the operation leads to septic complications which he cannot withstand. We fear for him chiefly, if not only, when the extent of the operation is formidable, or when the most sensitive regions of the body, sometimes remote and almost inaccessible, are attacked by methods which half a century ago were beyond the wildest dreams of the most adventurous mind. Our main concern in these days is with the condition of the patient before and after operation. We seek to make him as safe for surgery as surgery has been made safe for him. Lister, in short, has made all the methods applied by the surgeon almost devoid of risk in themselves. The risks run are dependen upon accessory factors, upon the state of the patient, the nature and extent of the disease, the intrinsic susceptibility of organs, or the anatomical conditions responsible for the difficulties which must be surmounted.

Do we fully realise the implication of all these statements? We are at the end of an epoch, indisputably the greatest in our history, the epoch in which manipulations by the surgeon have been robbed of the prohibitive dangers which formerly repelled. Now when failure comes it is the individual who fails, not the methods of which Lister laid the eternal and unshakable foundations. Lister by his genius recruited an army of surgeons which has gained astounding victories. The human body from crown to toe has for all time become our indisputable kingdom, within which we may come and go at pleasure, undismayed by the pestilencies which menaced us before Lister forever subjugated our enemies. Lister is indeed Captain of the men of life.

We, who inherit the glorious legacy of Lister, must not be content merely to enjoy and exploit our incomparable heritage. No great teacher measures his success in contemplation of his own efforts. His greatness lies rather in the work which he inspires others to do, in the tradition not of past accomplishment, but of future devotion. Traditions are fostered and increased, not by routine observance of ancient ceremony nor by mute obedience to outworn creed, but by active faith forever seeking new truths and exploring new paths, in conformity with the old spirit and with unchanging devotion to the great ideal of which the tradition is the shrine. There is immortality of the tomb, and immortality of the resurrection. The soul of a great teacher is born again in his pupils. We are Lister's disciples. What, then, are we to do with his gift to mankind? We use it already to the immense advantage of the individual sufferer; a therapeutic weapon of unapproached perfection, we are making it, and we must continue in increasing degree to make it, far more than that. After the Great War the statesmen of Europe, moved by the highest ideals, sought, not perhaps wholly in vain, to convert the allied victory into lasting peace. The statesman's ideal is a warless world. War is to end war. Ideals are not so much for capture as for pursuit, and though the statesman may never attain his ideal, yet the happiness and progress of mankind surely depend upon the grim and perhaps endless struggle to reach it. So, too, for us surgery must be regarded as the most powerful weapon of research upon man and animals ever given to our hands; and the end of research is not the cure only, but far better the prevention, of disease.

JOHN HUNTER'S CONCEPTION OF SURGERY.

The oration I have now the honour to deliver was founded 114 years ago as "a lasting mark of respect to the late John Hunter."[3] Let us turn to Hunter, the greatest surgeon of all the ages before Lister, and see how he regarded the art he practised. In the opening lecture of each surgical course, Hunter said to his students,[4] "The last part of surgery, namely operations, is a reflection on the healing art; it is a tacit acknowledgment of the insufficiency of surgery. It is like an armed savage who attempts to get that by force which a civilised man would get by stratagem." In his "Treatise on the Venereal

Disease," [5] a work more frequently quoted for its glaring errors than for its profound truths, he indicates one of the ways which leads to this ideal, the prevention rather than the cure of disease. He writes: "As disease in general should not only be cured but when it is possible prevented, it will not be improper to show as far as we know how that may be done; for in this disease we can, with more certainty, prevent infection, its origin being known." He then adds, "corrosive sublimate in water, about a grain to 2 to 8 ounces has been known to prevent the catching of the disease."

Hunter anticipated that a time would come when surgery, gaining much from the general advance of knowledge, might be rendered both knifeless and bloodless. I do not speak with irony when I say that Lister's work has brought us appreciably nearer to Hunter's ideal. It is true that its first effect has been to increase a hundredfold the operations practised, and to cause an advance into territories never before subdued. The advance was timorous, halting, and at first so unsafe that the men who led the thought of the day, whose stubbornness was iniquity, whose changeless idolatry was the worship of the images of their fathers, did not hesitate to demand that he who practised such a deadly operation as ovariotomy should be indicted for manslaughter. Lister so taught us that to-day, with little risk and with incomparable advantage to our patients, we who are strong in the faith that our fathers rejected, not only attack disease with remedial operations, we also seek out and expose, we inspect and study it in its deepest recesses, and in its earliest structural manifestations, sometimes discovering its cause, or at least its impressive antecedent, and often tracing the lines of its gradual advance. We are at last coming to appreciate the reaction of living organs upon each other. As I have claimed on earlier occasions, we have created and are slowly building up knowledge from which our predecessors were completely debarred, not new science but new vision of an old science: the pathology of the living. This branch of surgical learning will continue to grow, and therein surely lies our hope that surgery may one day help to end surgery, by enabling us to discover how these earliest processes of disease may be inhibited. Some claim this as the era of preventive medicine. Is there not preventive surgery also? Hunter was possessed of an ideal. Lister gave the power to realise it. We, too, wage war to end war. "Pereant arma bellica."

THE ALLIES OF SURGERY.

At the end of a long, arduous, and triumphant surgical campaign we, if we are prudent and foresighted, shall survey our equipment and our arsenals and consider the strategy of our next advance. The military leader of to-day seeks help from every branch of science, the victorious leader is he who best knows where to seek the help of which he is in need; who has the genius early and quickly to perceive how all new knowledge can be best applied to the art of war. Surgery, too, is warfare; its advance is conditioned by contemporary progress in every branch of science and its virtue lies in the number and the vigour of its allies. Into what alliances, then, has surgery entered with other branches of knowledge?

The science of physics has brought radiology to our aid, and the discovery of the X ray has rendered the living body translucent. After an opaque meal these rays disclose the normal movements of the alimentary canal; and we learn, as in no other way, the functional anatomy of the intestine. Any defect of outline may reveal a structural deformity and perhaps enable us to make a precocious diagnosis of conditions whose terminal stages when neglected are fatal.

The art of the chemist can be allied with that of the physicist, as the work of Graham, of St. Louis, has shown, with the result that the physiology of the liver, the functional anatomy and the pathological conditions of the gall-bladder, the association of gall-bladder activity with movements of the duodenum may all be studied by a new method. And this method, in alliance with that of the surgeon, realises another stage in our advance towards the prevention of gall-stones, themselves a tardy result of insidious changes originating elsewhere. Chemistry lends its invaluable aid in discovering for us the functional activity of the kidneys, and by its investigation into the cholesterin and calcium content of the blood is helping us to understand some of the problems relating to the functional activity of the liver and gall-bladder. Such conditions as acidosis and alkalosis offer impenetrable secrets if chemistry is not brought to our aid.

Physiology by its inclusion in the Faculty of Medicine acquires a double function. It remains a pure science directing its inquiries solely to the advance and perfection of knowledge. But it becomes also an applied science in league with clinical medicine and surgery. As he sees his conquest of knowledge applied practically to the saving of human life the physiologist will be encouraged to yet closer study of normal and aberrant vital processes in man. He, too, should stand with the surgeon by the bedside. The great gap between the powers of the surgeon and the aid which the physiologist might give would thereby be reduced, and the reproach removed from his science that, in this sense, it is lagging far behind. The surgeon's activities enable him to uncover the hidden mysteries of early structural changes. He offers new opportunities for the study of normal and perverted function to the physiologist with whom he might inquire into those early functional changes which correspond to, and are caused by, organic disorder. The surgeon seeks earnestly to know what degree of impairment of function is to be attributed to the textural changes which our new methods have revealed to us. The physiologist may tell us much that we are eager to learn of the effects of our manipulations upon the normal activity of tissues, and of the full or imperfect return of function when diseased tissues have been removed. With his help we may learn what without him we may never learn, the significance and the methods of the causation of early symptoms, and the origins of those pathological changes with whose late mutilations we are, unhappily, only too familiar. With our help he has learnt what otherwise he could not learn; that, for example the spleen by an excessive destruction of red cells may produce a condition of jaundice, and that the removal of the enlarged spleen results in the disappearance of the jaundice, which is thereby demonstrated to be of hæmolytic origin. Physiologist and surgeon are far more often than is realised necessary to each other, and a closer communion should exist between them. Many of the truths the physiologist endeavours to teach can be demonstrated more clearly in the wards than in the laboratory, and are therefore, because of this human interest, impressed almost indelibly upon the minds of students. The phenomena of cerebral compression, of Traube-Hering curves, of Cheyne-Stokes respiration; the symptoms of hyperthyroidism, and those produced when the secretion of the thyroid gland is diminished or absent; many of the aspects of jaundice, in addition to the demonstration of hæmolysis as its occasional cause, and of the relations between the liver, the spleen, and the bone-marrow; illustrations of the normal and aberrant functions of the kidney; changes in the chemistry and constitution of the blood may all profitably be discussed in the ward rather than in the laboratory or the lecture theatre. Students would then realise from their earliest days the truth, which later comes almost with a shock, that physiology and anatomy are not fundamental subjects but are interstitial, and should grow alongside and be incorporated with the facts of clinical medicine and surgery which they illuminate and explain. Interstitial tissue has as one of its functions the carrying of blood-vessels to nourish cells whose activity is dependent upon the richness of their blood-supply. Biology provides the interstitial tissue of surgery;

the activity and the growth of surgery depend upon the nourishment which biology may bring. Unless surgery calls in the aid of all the sciences with which biology is related it will remain as static as ancient geometry, whose figures were drawn once for all. Modern geometry is concerned with function, with the variations of movement by which a figure is described. Surgery's concern in the future will not only be with the states produced, with established organic disease, but with its allies it will help to eradicate some of those variations in function by which perhaps they have been caused, with which they are associated, and by which their presence is declared.

If sometimes we blame Sharpey and his school for the unhappy cleavage between anatomy and physiology,[6] we must at least acknowledge the great debt we owe to him for laying so firm the foundation of new methods for the studying of functional anatomy in man and in animals. Physiology, with its offspring biochemistry, has introduced physical and physicochemical methods; methods of quantitative observation which have supplemented where they have not supplanted the merely qualitative methods. The brilliant work of Sherrington, Lucas, and others upon the nervous system gave us fresh conceptions of it; further advances along their lines were becoming difficult until the application of thermionic valves made it possible, by recording the transmission of impulses in the afferent nerves, to investigate the effects of stimuli upon the sensory end-organs. And in the interpretation of symptoms, a study to which my old friend James Mackenzie bent the strength of a most eager and original mind, physiology alone can read the occult significance. In acute pancreatitis there is, as Halsted,[7] a great benefactor of mankind, first told us, a lividity of the face. Why? Is it due to some disordered action of the respiratory system imposed by the closeness of the affected organ to the diaphragm and the structures which lie above it, or is there circulatory stasis, or alteration in the blood pigment?

Physiology is the master of all the methods by which these three possible causes may be quantitatively investigated. Estimations of the oxygen saturation of the arterial blood give information of disturbance of respiratory function; information which we may compare to that derived from a measurement of the amount of blood-urea when the renal functions are deficient. Estimations of the carbon dioxide combining power of the blood are essential if we are to recognise the presence and the degree of acidosis. Circulatory stasis may be gauged by the ethyl iodide method of measuring the circulation rate. Alterations of the blood pigment are detected by the spectroscope, and quantitative estimations of abnormal pigments are readily made after the method of Hartridge.

Like the physiologist the bacteriologist is engaged in work which is ranged alongside our own. The more he discovers of the offensive powers of bacteria and of the defensive mechanism of living flesh under their attack, the nearer are we brought to our surgical ideal. The alliance between bacteriologist and surgeon has been necessary for the proof that the true estimate of an antiseptic is not measured only by its bactericidal value tested in the laboratory, but also by its power to encourage the blood serum or the tissues themselves to ward off and to break up an attack. Hunter, with the crude methods which were all he had at his disposal, demonstrated the tryptic power of wound discharges and anticipated a part of the admirable work of Almroth Wright during the war. Who could have imagined, when Lister's work began, that to-day we should be able to keep tissues alive in our laboratories, breeding them and growing them in captivity, separating the one kind from the other, noting the influence which one type of cell is able to produce on its neighbours, and thus coming by the kind of knowledge which John Hunter so earnestly sought, a knowledge of the intrinsic processes of growth and repair? The problem of malignancy is now installed in our laboratories, and the cancer cell is being compelled to yield most reluctantly some of the complex secrets of its bolshevist behaviour.

The old art of vital staining, which Hunter learnt from Belchier, of Guy's, has taken on new improvements; by means of suitable dyes we can now select special elements in the living body, trace their movements and note their conduct. The experimental embryologist, too, can help us if we seek to know in what manner the various tissues of the body come into existence.

These, then, are the allies of surgery in the Great War: biology in all its branches, chemistry, physics, radiology. Never before has the master surgeon had such bountiful resources at his disposal. He cannot afford to neglect a single one of them. The urgent problem of our time is therefore a dual one. We must seek to determine the line of advance which surgery will trace in the years ahead, increasing and strengthening our alliances; and we must earnestly discover how the leaders of our army of advance are to be trained. Are the old methods which in their day served so well still enough, or is the form of warfare already so changed, and now so rapidly changing, that a new discipline and a wider knowledge are needed?

HUNTER AND LISTER.

To answer these questions we must look backward, and, calling upon our past experience, seek in the records of our great masters not so much what their knowledge was, but what methods they pursued as they qualified themselves for great leadership. We shall find at once that Hunter and Lister, incomparable among surgeons, each put himself through a long and arduous training, never resting in his inquiries as to the activities of living matter, as to its behaviour in health, and its reactions in disease. At the threshold of our survey we recognise that the activities of our two leaders are not unrelated. Hunter's professional life covered the latter half of the eighteenth century, Lister's the corresponding half of the nineteenth century; between them there intervened two generations of surgeons. My distinguished predecessor, the late Sir Rickman Godlee, who gave this oration in 1913, tells us in the life of his uncle Lord Lister[8] that, "Hunter was Lister's greatest hero," that "his copy of Palmer's life of Hunter was marked in many places by pencil notes which show that he was studying it at least as early as 1855," that "a proof of Sharp's engraving of the portrait of Hunter by Reynolds, which had belonged to Syme, hung in his study," that "he always spoke of Hunter with reverence." Further, if we turn to the paper[9] which Lister read to the Medico-Chirurgical Society of Edinburgh in March, 1858, on the "Causes of the Coagulation of the Blood" we find evidence of his early admiration of Hunter. "The nearest approach," he wrote, "which I have been able to find to such an observation (that blood which is retained in the smaller veins of the body remains uncoagulated) is contained in that inexhaustible treasury of original observations and profound reflection, the works of John Hunter."

If I may borrow a simile from the football field to express the relation of these two great men I would say that it was Pasteur who made the final pass to Lister possible, it was Hunter's captaincy in the scrum that placed Lister in the scoring position. Indeed, we have to admit that while Hunter's resource in midfield has never been excelled, or even approached, and though the ingenuity with which he worked the surgical ball towards the goal remains unsurpassed, yet when he was in a scoring position and we are counting so confidently upon a "try," the ball is fumbled, and our hopes are foiled. The young surgeon of to-day can learn almost as much from Hunter's mistakes as from his triumphs.

The Career of Work of John Hunter.

Let us now examine the discipline to which John Hunter submitted himself to attain his leadership. He is the "Dick Whittington" of British surgery. In September, 1748, at the age of 20, he left his home,

an upland farm in the parish of Kilbride, eight miles to the south of Glasgow, and travelling on horseback he entered London in a little under a fortnight, alighting in Covent Garden where his brother William kept a school of anatomy. William Hunter was beyond doubt the foremost medical teacher of his time; his best pupils caught from him the spirit of research. Among his inspired disciples were John Hunter, William Hewson, William Cruickshank, Charles White of Manchester, and William Hey of Leeds, the founder of the Leeds Infirmary, the first stone of which was laid in 1767 by Edwin Lascelles, the first Lord Harewood. In 1751, after three years of study, John Hunter counted himself a qualified surgeon; he remained in his brother's school to teach and to research, at what salary we cannot now tell, but assuredly it was a small one. John Hunter thus entered the critical years of his life, for the career of a young surgeon was determined then, just as it is to-day, not so much by his conduct during the years of pupilage, as by the use made of the period after qualification. The problems which a young surgeon first attacks, and the methods he employs to solve them, are suggested to him by the age in which he lives and by the school in which he has been trained. In John Hunter's youth a knowledge of the human body was being extended by a skilled use of the art of injection. And so we find him in his earlier years following arteries to their ultimate termination, tracing the course of lymphatic vessels, unravelling the structure of the testis and the kidney by means of an expert use of the injecting syringe and of the hand lens. He remained in his brother's school teaching and researching until the spring of 1761 when he entered his thirty-fourth year.

Here is a list of the subjects he investigated during that period. He began to note the earliest stages in the developments of the chick[10] and continued this study to the end of his life, deriving from it guidance for the interpretation of the phenomena of repair and of disease. We find him exposing the thoracic viscera, using artificial respiration and noting accurately what happened to heart and lungs when the air-supply was withdrawn and when it was renewed.[11] He studied respiration in birds, keeping cocks alive which breathed through their cannulæ inserted in their air sacs instead of through their windpipes.[12] He carried out a series of experiments on absorption from the bowel in various animals; the experiments were well planned and skilfully executed, but he drew from them a wrong inference, one which misled him subsequently time after time in the interpretation of the processes of disease. He believed that these experiments proved that all the products of digestion were absorbed by the lacteal or lymphatic system and that none entered by the veins.[13] Our hero, as we have seen, was often weak when he approached the goal posts. We find him tracing out the distribution of nerves in the nose and giving, for the first time, the right explanation of why the fifth pair of cranial nerves should enter into the field of mucous membrane supplied by the olfactory nerves.[14] The description he then gave of the descent of the testis [15] and of the vital phenomena which attends that still mysterious operation has never been surpassed. He kept a tame kite to prove that a stomach accustomed to a flesh diet could be educated to deal with one which was purely vegetarian; he noted the phenomena of digestion in the stomachs of fish, fowls, dogs; he explained post-mortem destruction of the stomach.[16] He placed pieces of raw meat in suppurating wounds and observed the digestive effects which followed; he measured the digestive (or tryptic) action of pus.[17] We find him deeply interested in the formation of pus upon the unbroken surfaces of serous and of mucous membranes. He began a series of observations on the uses of the vesiculæ seminales [18] and was led thereby to investigate experimentally the potent and mysterious influence which testis and ovary exercise on the development and growth of the body.[19] We find him seeking signs to distinguish between tissues in which life was latent and those from which life had already vanished. He believed he had discovered the organ of hearing in fishes and sought to discover an explanation of the curious fact that the ovaries of eels were always destitute of ova.

As a collector, like Pascal a "ramasseur de coquilles," who often found a pearl of great price, as an observer of incredible industry, gathering facts just for the sake of their individual value and without at the moment any care for their relative significance, for the effect of their impact upon other facts, he ranks second only to Hippocrates. But when these facts were stored in his mind and illustrated by a series of specimens, he was by no means inexpert in their interpretation or in raising a general truth from a multitude of singular examples. But as we read we seem to be oppressed by the verbal difficulties he encountered. The words will not come. Even the constructive thoughts may sometimes appear to be absent, puny, or unmanageable. He cannot get his mind round them; if by chance we think that he has done so, the splendour of his thought is disfigured by his uncouth language. Abernethy is not alone in telling us of Hunter's paucity of language and of his inaptitude in its use; but we need no other evidence than that which his own works rarely fail to give use. His letters are the same. Illiteracy is not absent from them, though their meaning is often clear enough, especially when express instructions are given. It is when Hunter endeavours to rise to abstract generalisations that we see this incapacity chiefly and lamentably displayed. Obscurity of language, I believe, even in abstract matters, often means obscurity of thought. Words may come after thought, but not long after surely. Hunter's defects in language were due in part, no doubt, to the absence of any early education of value, but they were not lessened by his studious avoidance of the work of others. His rebuke to Jesse Foot, as brutal and irrelevant as many of Johnson's, would have confounded anybody, but it is irrelevant nevertheless, and it was a confession of his own imperfection.

After spending fully 12 years experimenting, John Hunter in the spring of 1761 and in the thirty-fourth year of his age, engaged in the practical work of his profession and was appointed surgeon to the army. In the summer of 1763 he returned to London on half pay and commenced practice. He bought "a piece of ground called Earl's Court, near the village of Brompton, and two miles from Hyde Park Corner" on which he built a small house. Earl's Court, his week-end cottage, was soon converted into a zoological garden and experimental laboratory; many new problems engaged his mind and several avenues of investigation were opened up there; all of them were made to converge on the same subject—the behaviour of living matter under all conditions. It was not until 1768, when he was 40 years of age, that his private practice began to grow, enabling him to take a lease of the house, 42, Jermyn-street, vacated by his brother William. We may now consider him, after an apprenticeship of 20 years, fairly launched in practice. Three years later he considered that his income justified him in undertaking the responsibilities of marriage.

We see, then, this leader of surgery of the eighteenth century devoting 20 years of his life to arduous observation and experiment so as to qualify himself for the practice of his art. There has probably never been a man in our profession with so wide an intellectual interest, so profound a knowledge of so many varied subjects wholly derived from direct personal inquiry and observation. His industry was inexhaustible. He had no equal either as physiologist or pathologist; he was already first among comparative anatomists, and was indeed one of the founders of this science. He was a naturalist, all subjects in animal and vegetable physiology seeming to attract him. All his unequalled attainments as biologist were brought to the service of surgery, in his hospital work, and finally in the largest private practice of

his day. Before Hunter's time surgery was a thing apart, independent of all other sciences, ostentatiously aloof from them, and governed only by the experiences and aptitude gained in the day-to-day practice of the art. All advance was therefore slow, even when recognisable, and was largely empirical. No physiological knowledge, nor any experimental discovery broadened the old path, or opened up new ones. Hunter changed all this. Not the least of his achievements was that he made alliances for surgery, and linked it inseparably with biology. Hardly a day passed without some experiment. I may quote a statement of his to show how he regarded experiment.[20] "In pursuing any subject, most things come to light by accident; that is, many things arise out of an investigation that were not at first conceived, and even misfortune in experiment has brought things to our knowledge that were not, and probably could not, have been conceived; on the other hand, I have often devised experiments by the fireside or in my carriage, and have also conceived the result; but when I tried the experiment the result was different, or I found that the experiment could not be attended with all the circumstances that were suggested." This statement helps in some degree to explain the number of apparently unrelated subjects which Hunter explored in his younger years. As he opened a new subject he still continued to investigate the old; at the time of his death he had over 50 portfolios in use, each relating to a particular line of investigation.

The "misfortune in experiment" has its counterpart in operative surgery. An interesting little paper might be written on the Advantage of Error in Medicine. We may recall Spencer Wells's operation for an "ovarian cyst" when tuberculous ascites was found, and the surgical treatment of peritoneal tuberculosis inaugurated. The same distinguished surgeon, a pupil of the Leeds school, operating upon a jaundiced girl of 18 for "fibroid tumour of the uterus," discovered that the tumour was not pelvic but splenic; he removed the spleen; in a few days the lifelong jaundice was gone, and the surgical treatment of hæmolytic jaundice was begun. So McGill, the pioneer in the operation of prostatectomy, precedence in which is so foolishly claimed for others, removed what he believed to be a "tumour at the base of the bladder." When I, acting as his house surgeon, examined the tumour microscopically and found that it was prostatic, I felt that I had the chance to twit my beloved chief with his error. His reply, when I told him of his mistaken diagnosis was, "Then why don't we always take the prostate out when it projects into the bladder"?

The Career and Work of Lister.

When we compare Lister's preparation for professional leadership with that of John Hunter we are impressed rather by the resemblance than by contrast. Lister, the greatest material benefactor of mankind that the world has ever known, began his medical studies at University College, London, at the age of 21, in 1848, exactly a century after John Hunter had settled down to his work in Covent Garden. In the hundred years that had passed medical education in London had undergone a revolution; voluntary schools had almost disappeared, to be replaced by the organised schools and colleges with which we are familiar to-day. John Hunter was Scotch, Lister English, his ancestry coming from Yorkshire and Cumberland. John Hunter owed much to his brother, Lister still more to his father, who was not only a successful man of business, but also a Fellow of the Royal Society. William Hunter, who impregnated the mind of his brother, drew his own inspiration and owed his intellectual guidance to the Munro-Cullen school of Edinburgh. Lister was early influenced by William Sharpey and by Wharton Jones, both Edinburgh men, steeped in the traditions of this very school. After qualifying in 1851, and taking the Fellowship of this College at the age of 25, Lister's first research was begun; it was concerned with the contractile tissue of the iris.[21] The injection syringe, the new instrument which had served Hunter so well, had been displaced during Lister's youth by the microscope. We rejoice, nevertheless, to notice that when Lister applied this new instrument to the tissue of the iris it was the function rather than the form of this structure which excited his interest. In this investigation and in another,[22] begun in 1852, "Observations on the Muscular Tissue of the Skin," we recognise that, influenced by William Sharpey, he had become familiar with discoveries made in other countries, notably with those of Kölliker in Germany. But clinical work was not forgotten, and a house surgeoncy at University College was followed by perhaps the most critical event of Lister's life. In tracing the motives which have directed the progress of medicine we are constantly reminded of the influence and the power of great teachers. Such men are gratefully remembered by posterity, not so much for the work which their own hands or minds have created or have modified; not for their written words which so soon seem to possess little more than an antiquarian interest; not for their spoken words which, though at the moment of their delivery they may walk up and down in the hearts of men and stir them to new thought or to great action, yet seem so frail and cold and lifeless when the morning comes; not for any of these, but for the spiritual legacy they bequeath to those inspired by their own zeal and trained in their own methods to seek the truth in eternal principles. It is this which gives posthumous life, the true immortality.

Not the least of the claims that John Hunter makes upon our reverence is that he was the first founder of a school of surgery. He was not distinguished as a teacher. "He had not the happy talent of displaying the stores of his mind, nor of communication to others the same perception of the importances of his facts and opinions as he himself entertained."[23] Abernethy said his language was "inelegant and often coarse," "his delivery heavy and unengaging," "his method confused with attempts to find words for thoughts, or else to read from little scraps of paper." Yet despite these unattractive or even repellent qualities, men who themselves influenced surgery for generations afterwards, whose influence still survives, Abernethy, Astley Cooper, Cline, Everard Home, Blizard, all boasted of being his pupils, and taught his method until it became, and still remains, a tradition in their schools and from them has spread to every school of medicine in the world where Hunter is recognised, unchallenged, as the founder of scientific surgery. My old friend, Dr. Finney, of Baltimore, in his recent address before the Hunterian Society, an address containing much information new to us in this country, speaks eloquently of the germinative influence of John Hunter upon American surgery. He tells us how John Morgan and William Shippen, the founder of the first medical school in America, from which the present medical department of the University of Pennsylvania descends, were "much influenced" by John Hunter; and he adds "so virile and dominating was his influence that it may readily be recognised and transmitted like other distinguished hereditary traits." And again, "The seed sown by John Hunter is being continually replanted and perpetuated by succeeding generations" in America. Finney quotes Dr. Welch, the intellectual parent of so many sturdy sons, as saying of the "Father of American surgery," "Physick was almost as much a mouth-piece of the doctrines of John Hunter in America as was Abernethy in London." In his "Surgical Memoirs" J. G. Mumford writes: "The best American surgery grew out of English surgery with Hunter as its prophet." Hunter was the lodestone which attracted men who proved to be the pioneers of surgery in that great country where our Art is practised by its highest exponents with unsurpassed skill and safety. Mumford no doubt remembered that the first professor of surgery

in his own University of Harvard was Collins Warren, distinguished son of a distinguished father, a pupil of Astley Cooper, himself the chief of Hunter's disciples, and a teacher who drew men to him from afar. So, in like manner, the debt we owe to Italy must forever be acknowledged when we remember that it was the magnetism of Fabricius that drew the youthful Harvey to Padua. But for Fabricius and the magic of his work the discovery of Harvey, the great glory of English medicine, might not have been made for generations.

William Sharpey, whose lectures "inspired me with a love of physiology that has never left me," had not only Lister's future, but also all that this meant for mankind in his own hands when he sent Lister to Edinburgh to the "safest surgeon" of his day, James Syme. It was an almost incredible exodus. When the Hunters came southwards they followed a national habit established for centuries, and never permitted to fall into disuse a habit which incited the characteristic invective of Samuel Johnson. When Lister went northward he founded a new tradition and made a novel breach in a custom which seemed to have become as firmly accepted as a law of nature. Lister's most distinguished successor in his chair of clinical surgery, my old friend Harold Stiles, made the same adventure, to Scotland's great advantage.

London hardly notes and seems but little disturbed by the arrival and the progress in her midst of young medical men from Edinburgh. (Whatever would she do without them?) Edinburgh, one may suspect, raised her eyebrows when she saw a young doctor from London established as Syme's house surgeon, and she must have rubbed her incredulous eyes when, within two years, she saw him become an extramural lecturer in surgery within her own stronghold. It is quite impossible to exaggerate the importance of this teaching appointment on Lister's future. He met his students—the ultimate number in his first class was seven—on Wednesday, Nov. 7th, 1855. Lister believed, as Hunter had believed, that the beginning of surgery was a knowledge of the process of inflammation; and accordingly he had resolved before his lectures commenced to obtain a new first-hand acquaintance with inflammatory processes as watched in living tissues. Clearly he realised long before the humblest of his intellectual descendants the need to study the "pathology of the living." A frog was caught in Duddington Loch; surely the greatest frog in history, honoured by being made the subject of this research. Why did not someone suggest to Lister when he was granted Arms that this frog should be immortalised in heraldic device? The web of this frog's foot gave all the necessary opportunities for the inquiry. Lister had many new advantages over Hunter; he knew that the tissue he examined was made up of living units—cells! He had at his disposal a powerful microscope, which could mark the behaviour of these cells; and Claude Bernard, in 1853, had taught him the existence of vasomotor nerves. It was during the examination of the frog's web that Lister made a biological discovery of the highest importance—one which experimental biologists are still exploiting—that pigment-containing cells, such as are seen in the frog's web, give more easily visible, and more delicate, reactions than any other kind of living cell when subjected to a physiological or a pathological stimulus. This quality enabled him to study the effects of inflammation in terms of individual cells. He was able to prove that these pigment cells still gave vital responses 15 days after the leg had been amputated.

The list of researches carried out by Lister between the time of his arrival in Edinburgh in 1853 and his appointment to the chair of surgery in Glasgow in 1860 would almost suggest that he was seeking to fit himself to become an experimental physiologist or pathologist rather than a surgeon. I would earnestly emphasise this point, for its significance in Lister's day was far less that it is to-day when the full harvest of his work is ready to be gathered. In most of these researches we can clearly see the strong influence of John Hunter. It is not accident surely that the men who have done most for surgery trained themselves rather as research workers than as practitioners, that they revelled in and set out to master one problem after another in biology. Lister's acknowledgment of the immense influence of Hunter upon him is not in the least overstrained. If the spirit of Hunter watches over his museum and this College, as we hope it may, how infinite must be its pride in the thought that the one man greater in service than Hunter himself was his direct intellectual offspring.

Let me recall the names of a few of Lister's early papers: That "On the Flow of the Lacteal Fluid in the Mesentery of the Mouse,"[24] begun in 1853 and published in 1857, is a direct extension of Hunter's experiments on absorption;[25] the communication on "The Persistent Vitality of the Tissues"[26] is founded upon observation made by Hunter himself on the same subject. The studies on "Coagulation of the Blood" began by observing what happened in the veins of "sheeps' trotters" taken from the shambles. By devising new and critical experiments he was able to carry the knowledge concerning coagulation to a point far beyond that which Hunter had reached a century before him. Yet his methods were clearly modifications of theirs. Lister's vocabulary, indeed, was still that of Hunter, for he spoke of the "solids" of the body, of "preternatural stimuli"; of the "disposition of the tissues"; of "inherent tendencies"; and of "sympathetic irritation."

The events which followed Lister's arrival in Glasgow are too well known to all the world to need more than the briefest recapitulation. Lister was then 33 years of age, almost the same age as Hunter when he joined the army as a surgeon. As a result of seven years of a preparatory experimental investigation, conjoined with a wide clinical observation which was closely related to it, he had become immersed in all the problems relating to inflammation and suppuration. He had already formulated a hypothesis that suppuration was due to putrefaction: and in 1865 was ready to put his supposition to a practical test. Pasteur's epochal discovery that putrefaction was due to "germs" set matters going. Lister wrote[27]:—

> "To prevent the occurrence of suppuration, with all its attendant risks, was an object manifestly desirable; but till lately apparently unattainable, since it seemed hopeless to attempt to exclude the oxygen, which was universally regarded as the agent by which putrefaction was effected. But when it had been shown by the researches of Pasteur that the septic property of the atmosphere depended, not on the oxygen or any gaseous constituent, but on minute organisms suspended in it, which owed their energy to their vitality, it occurred to me that decomposition in the injured part might be avoided without excluding the air, by applying as a dressing some material capable of destroying the life of the floating particles."

Lister was first of all concerned with the destruction of organisms after they had obtained access to wounds. He knew of the experiments with the Carlisle sewage, and of the bactericidal properties of carbolic acid. He observed carefully the effects produced upon living tissues by antiseptics and concluded that the reparative processes in a wound were not thereby weakened. We are apt, however, to forget the gradual change that came over Lister's views, and the effect this had upon his practice; how he came to a full realisation of the essential powers of defence possessed by the living tissues, and of our obligation to protect and, if possible, to increase them. Sir Rickman Godlee, who knew more of Lister than any man, has written that Lister before 1881, when he first told the world of his changed opinions,

> "had long recognised and taught that healthy living tissues exercised an inhibiting influence on the growth of micro-organisms . . . He therefore began to wonder whether, if only slightly damaged, for example by the incision made by a very sharp knife, the living tissues of any wound might not be able to deal with a certain number of germs by their own efforts."

This we gleefully observe is a return to Hunter's work in which he recognised the "powers," "dis-

position," and "action" of living tissues. It may not be inappropriate to quote Lister's own words. He writes [26 29]:—

"The original idea of the antiseptic system was the exclusion of all microbes from wounds." Again, "During the operation to avoid the introduction into the wound of material capable of inducing septic changes in it, and secondly, to dress the wound in such manner as to prevent the subsequent entrance of septic mischief." Again, "In wounds already septic, attempts are made with more or less success to restore the aseptic state." Again, "In speaking of the antiseptic system of treatment, I refer to the systematic employment of some antiseptic substance so as entirely to prevent the occurrence of putrefaction in the part concerned, as distinguished from the mere use of such an agent as a dressing"; and further, "I always endeavour to avoid the direct action of the antiseptic substance upon all tissues."

The distinction between the preventive and the curative use of antiseptics is in many respects that existing between, on the one hand, the power of a germicide as determined by experiments in vitro, and, on the other hand, its capacity to destroy organisms when it is introduced among the living and the dead tissues of a wound. In the former there is a direct conflict, a clean fight, between the microbe and the chemical agent. Few or none of the many intervening conditions are present which have to be considered when a bactericide is introduced into a wound cavity wherein there are multitudes of actions and reactions which even now seem very obscure and are so often conflicting.

HUNTER'S ANTICIPATION OF MODERN PROGRESS.

We may, therefore, regard Hunter and Lister as bridge-builders; it is out of a multitude of scientific observations, of apposite inferences, and of wide generalisations that such bridges are built, stone by stone, arch by arch. Posterity will perhaps remember only the one bridge, permanent, indestructible, all sufficing, of Lister. Across that bridge we have swarmed, a triumphant host, and a vast new territory has met our almost incredulous eyes. Hunter was forever building bridges, ambitious in design, firm in their foundations, but always left unfinished. Some day new architects will come and given them the full span which Hunter surely meant them to have. It is remarkable to note how often he anticipated the lines along which we see that modern surgery is making its advance. Cultures of both benign and malignant tissues are now being kept alive by methods which, devised by Dr. Ross G. Harrison while studying the growth of fibres from the nerve-cells of a tadpole, have been rapidly developed by Alexis Carrel. John Hunter, too, tried his hand at experimental embryology. He "exposed the little animal (the chick embryo) by putting it into water heated to about 104° F. just covering the egg" and "hoped to keep it alive by these means and observe in the same chick the whole progress of growth, but it soon died"; therefore, he says, "I was obliged to have recourse to a succession." [30] He was an experimental surgeon, as may be shown from the following quotation[31] from one of his lectures:—

"Here is the testicle of a cock, separated from that animal and put through a wound, made for that purpose into the belly of a hen, which mode of turning hens into cocks is much such an improvement for its utility as that of Dean Swift when he proposed to obtain a breed of sheep without wool. The hen was afterwards killed and the testicle was found adhering to the intestines, as may be seen in this preparation where the parts are preserved."

He devised and carried out experiments to ascertain whether the growth in a cock's spur is due to a "disposition" inherent in the spur or derived from the constitution of the cock. He excised spurs from the legs of cocks and implanted them in their combs to note the rate of growth under such unfamiliar surroundings. The first vital stain ever used was madder; it was introduced to the notice of biologists in 1764 by John Belchier, surgeon to Guy's Hospital; by its experimental application John Hunter revolutionised our knowledge of bone growth and bone decay.[32] In the hands of Prof. A. V. Hill the measurement of heat in living tissue has become the most delicate and certain indication of the nature of their vital reactions. The manner in which living matter reacted to the application of heat and cold, and the degree of heat generated in living tissues, Hunter made the subject of an endless number of investigations, all with the practical view of ascertaining how much or how little should be done to keep damaged human tissues alive.[33] He was, as we have seen, an experimental physiologist and also an experimental pharmacologist.[34] He was psycho-analyst[35]; he tried to inoculate an ass and a bitch with the virus of syphilis.[36] He preached the doctrine of operating at the earliest possible stage of a disease, and placing himself in the position of the patient said, "Nor do I go further than I now think I would have performed on myself were I in the same situation." [37] He performed experiments on the sensitive plant which are now being repeated.[38] These are only some of the points in which Hunter has anticipated modern progress.

VISIONS OF THE FUTURE.

So much for the past in its relation to our greatest men. What of the future? Looking forward I humour my fancy and indulge my dreams. Imagination, Keats tells us, may be compared to Adam's dream—he awoke to find it truth. The art of the surgeon is the pillar of his science, and it is for science to discover how that almost perfect art may now be used to the fullest advantage. We eagerly await the day when disease shall not require to be checked in high career, but shall be blighted at its origin, or even denied existence, when our weapons of war shall be laid aside. That day may yet be far away, but already beyond the distant hills we see promise of the dawn. It does not perhaps so much or so deeply concern ourselves as those who soon must take up our task, and lead the hosts whose victory shall attain our high ideal. In due time, and in accord with ancient precedent, this country of ours, the fruitful mother of so many gifted sons, shall raise up in our schools the youths who shall go forth to conquer a crown. They will be best equipped who keep to the course, recall the methods, and are imbued with the ardent spirit of the two famous men whom we praise to-day, the two greatest surgeons the world has ever known.

Our youths must be prepared for self-sacrifice, for arduous discipline, perhaps for the most heart-breaking rebuffs, for the stern or even bitter criticism of their fellows. But there never was a time so rich in promise, so laden with rewards for those who labour with sincerity and truth. They will not travel alone. The whole army of science is in league with them, moving forward with incredible speed, eager to lay at their feet the triumphs of its astounding conquests. The responsibilities which rest on them, the intellectual accomplishments, and the dedication of their lives demanded of them, are enough to cause the stoutest heart sometimes to falter. Yet, armed with the sword of the spirit and the breastplate of faith, they will remember that the happiness of life lies in its responsibilities, that true joy is found in the quest for what may after a weary journey prove unattainable. Ahead lies the noblest of tasks to which they may consecrate themselves; for the lives of men are in their hands, the love, the happiness, the whole welfare of mankind. We need not fear. They will be worthy of their charge. God counts not result but effort.

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2. Lister: First announcement of his antiseptic method was made in THE LANCET, 1867, i., 326.
3. College Calendar, 1926, p. 32.
4. Works of John Hunter, edited by Palmer, 1837, i., 210.
5. Ibid., ii., 464, 465.
6. Elliot Smith: Brit. Med. Jour., 1926, ii., 816.
7. Halsted: Bull. Johns Hopkins Hospital, 1901, xii., 197.
8. Lord Lister, Sir R. J. Godlee, 3rd edition, 1924, p. 600.
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SOME OBSERVATIONS ON THE DIAGNOSIS OF HEPATIC DISORDERS.

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THE administration of galactose as a means of diagnosing liver abnormalities and also for estimating liver efficiency has been largely confined to German clinics. Like glucose, it is a monosaccharide, and is absorbed direct via the portal circulation into the liver. In health the ingestion of 40 g. results in no hyperglycæmia, and no galactose appears in the urine, as the glycogenetic capacity of the liver in health is sufficiently powerful to transform the ingested sugar into glycogen with the passage of but small amounts into the peripheral circulation, and in consequence only a small increase, if any, in the blood-sugar value. It must, however, be administered in a pure state before any reliance can be placed on the results obtained.

As early as 1906 Bauer[1] suggested the use of galactose, and Brasch[2] in 1908 gave a review of the earlier literature, pointing out that galactose builds up glycogen and that it is absorbed uniformly from the alimentary tract. In 1918 Kahler and Machold[3] made elaborate investigations on the value of galactose. They found that normally there is less than 30 mg. per 100 c.cm. difference in blood-sugar at the end of one hour after ingestion of the sugar, and that the maximum difference of over 100 mg. was obtained in cases of catarrhal jaudice. They came to the conclusion that it has yet to be established that galactosuria and hyperglycæmia are of any service in estimating hepatic efficiency other than derangement of the hepatic control of carbohydrate metabolism. Their practice was to estimate the blood-sugar one hour after the ingestion of the sugar and to obtain in grammes the amount lost in the urine. It is significant that they obtained negative results in cholelithiasis, and that syphilitic hepatitis yielded markedly positive figures.

Richard Bauer[4] in 1924 gave a very detailed account of the necessary precautions as regards purity of the sugar, &c., its advantages and its limitations. This observer placed reliance on the urine only—on the amount of sugar lost during the four hours following ingestion. But Kahler and Machold pointed out that there is often galactosuria with no rise in blood-sugar, and especially is this so in renal-leak cases. Taken alone, the amount that has escaped in the urine becomes too unstable a guide to liver efficiency. Rowe[5] in 1924, working on the metabolism of galactose, believes that the dose is little influenced by age, weight, or body area. "It is found to be apparently directly dependent on sex, and influence of mammary glands is suggested as a possible explanation." The female, he says, is able to tolerate more than the male. There may be some evidence to support this statement, which should be remembered when the liver efficiency of pregnant women is tested.

The German observers have attempted by a study of the sugar to estimate the degree of liver damage and even base their prognosis on it alone, and Bauer says "galactosuria is often the only positive sign of abnormal liver function." It is certainly misleading to depend on the urinary findings, as the threshold for galactose is not at all definite, and traces appear in the urine of the majority of healthy people. Even the blood values cannot, if taken alone, be always helpful. Indeed, they may be misleading. In this paper some evidence is offered to show that the galactose test, taken in conjunction with other simple tests, will prove to be a help and guide in distinguishing various cases of jaundice. It is not specific, and no interpretation should be based on it alone. Not only is a negative result obtained in normal cases, but also in those cases of jaundice, however deep, which are mechanical in origin. A stone in the duct, a carcinoma of the pancreas, enlarged glands at the hilum, all produce the same negative result provided no change has taken place in the liver cell itself. Their glycogenetic power is unimpaired—an activity which depends upon a healthy liver cell. If in any of these cases known to be mechanical in origin the result turns out to be positive it signifies that some damage has already taken place in the parenchyma. R. Bauer in his paper warns the surgeon who performs cholecystectomy that if the galactose test is positive in such a patient chloroform must not be used, as a further cellular intoxication may flare up a fatal hepatitis which was smouldering before the operation.

During the investigations on which this communication is based it was customary in all cases presenting jaundice to examine the blood for the following: bilirubinæmia, by the Fouchet and van den Bergh tests, estimation of cholesterol content of the blood, and the galactose tolerance test. The urine was also examined for bile salts and pigments and urobilin. In some cases the bromsulphalein test was also performed. By the summation of these tests one could arrive at a conclusion with some degree of assurance whether an icterus was obstructive, intrahepatic, or extrahepatic, a conclusion which many regard as being very simple clinically. This is true of jaundice in the late stages of obstruction, but, while clinically indefinite in the early stages, one can show definite laboratory changes by these tests even then. Again, clinical conditions are never cut and dried. There is some degree of obstruction in all toxic cases, and there is some hepatic cellular damage in all prolonged mechanical cases blurring the diagnosis, so that if we obtain by a series of tests a real knowledge of the dominant factors, this may be a real and timely help.

The Galactose Technique.

The sugar should be tested beforehand for its rotatory power, which should be at least a specific index of 76°. Less than that amount indicates too large a degree of impurity. Forty grammes are dissolved in about 400 c.cm. of water and given to the fasting patient, whose resting blood-sugar has been taken immediately before. The sugar is estimated in the blood every half hour for two to three hours afterwards. The urine is also collected up to the fourth hour and the amount of reducing substance present estimated. This is the amount lost out of the 40 g. ingested. Alone, this observation on the urine is open to many errors, as the threshold varies enormously in normal people, while in nephritic cases the kidney may entirely fail to excrete it. However, in people whose blood is difficult to obtain the amount in grammes lost via the urine is a rough index of the hepatic damage, provided that there was no sugar present in the urine before giving the galactose. In diabetes the test is, of course, valueless. Again, if much ascites be present, it has been shown that the absorption of the sugar via the alimentary tract may be delayed, and the sugar still excreted even for five to six hours following the ingestion. If the sugar in the urine is estimated by means of a polarimeter, as the sugar is galactose, a correction

Hunterian Oration: References.

(*Continued from previous page.*)

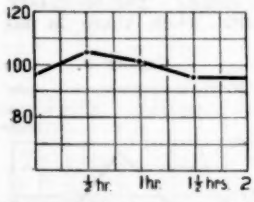
11. Works of John Hunter, iv., 169. 12. Ibid., iv., 181. 13. Ibid., iv., 299. 14. Ibid., iv., 187. 15. Ibid., iv., 2. 16. Ibid., iv., 119. 17. Ibid., iii., 442. 18. Ibid., iv., 20. 19. Ibid., i., 391; ii., 56; see also Essays and Observations by John Hunter, edited by Richard Owen, 1861, i., 234.
20. Observation on Bees, Works, iv., 422.
21. Collected Papers of Lister, i., 1. 22. Ibid., i., 9.
23. Paget: Hunterian Oration, 1915, p. 46, 49.
24. Collected Papers of Lister, i., 515. 25. Ibid., i., 25.
26. Works of John Hunter, iv., 299.
27. Collected Papers of Lister, i., 85. 28. Ibid., ii., 37. 29. Ibid., ii., 51, 340, 349, 365.
30. Essays and Observations, i., 206.
31. Works of John Hunter, i., 391. 32. Ibid., iv., 315. 33. Ibid., iv., 131, 156. 34. Ibid., i., 348, 350. 35. Ibid., ii., 307. 36. Ibid., ii., 151. 37. Ibid., i., 548, 549.
8. Essays and Observations, i., 357.

must be made, since its rotatory power is 82° compared with 56° for glucose. If the amount is multiplied by $\frac{5}{3}$ the result approaches accuracy.

Normal.

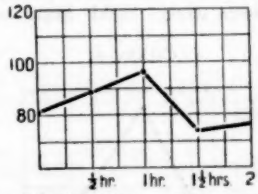
The ingestion of 40 g. of galactose does not result in an increase of the blood-sugar in normal persons. Chart 1 shows the blood-sugar values in such a person. There may be some slight increase, but in any case it is never greater than 30 mg. The urine contains always less than 1 g. in the three hours.

CHART 1.



Showing blood-sugar values in normal persons after ingestion of 40 g. of galactose.

CHART 2.



Galactose test. The curve obtained in carcinoma of the pancreas with obstructive jaundice.

Bauer tabulated his urinary findings as follows: Normal, 0–1 g.; high normal, 1–2 g.; positive, 2–3 g.; high positive, 3–12 g. The greatest loss that has been observed in this series is 6·5 g.

Jaundice of Mechanical Origin.

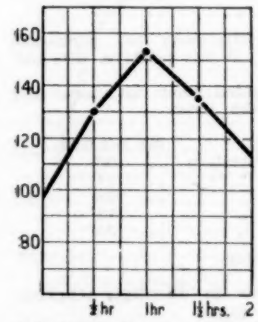
Mechanical causes of jaundice also yield a negative result, provided that the jaundice has not been prolonged. Chart 2 shows the curve obtained in carcinoma of the pancreas in which the jaundice is obstructive.

M. C. Obstructive jaundice. Carc. pancreas. Fouchet test: strongly positive; van den Bergh: direct reaction immediate; cholesterol: 212 mg. per cent.
Galactose tolerance test. (40 g. given):—

	mg. per cent.
Blood-sugar before administration	83
,, ,, ½ hr. after ,,	88
,, ,, 1 ,, ,, ,,	98
,, ,, 1½ ,, ,, ,,	72
,, ,, 2 ,, ,, ,,	75

0·8 g. of galactose appeared in the urine during the following four hours.
Bile salts and bile pigments: positive. Urobilin: negative. Diastase: 28 units. Fæces: total fats 54 g. per 100 g. dried fæces. Fatty acids 28 g. per 100 g. dried fæces. Bile pigment absent from the fæces.

CHART 3.



Galactose test in a case with obstructive lesion, but showing some intolerance.

Although the patient was emaciated to a great degree, and the jaundice was intense and of over a month in duration, the glycogenic function of the liver as judged by this test was intact.

In a certain number of cases in which the main findings point to an obstructive lesion the galactose test may be positive. This is true when the liver itself is riddled with secondary deposits from a malignant growth which itself is causing the main obstruction. Chart 3 shows this condition—the massive secondary deposits causing pressure on and ultimately destroying a large portion of the liver parenchyma.

H. P. Jaundice, 14 days, loss of weight two years. Fæces pale. Urine dark. van den Bergh: immediate direct Fouchet: strongly positive; cholesterol: 186 mg. per cent.
Galactose tolerance test:—

	mg. per cent.
Blood-sugar before administration	99
,, ,, ½ hr. after ,,	130
,, ,, 1 ,, ,, ,,	151
,, ,, 1½ ,, ,, ,,	135
,, ,, 2 ,, ,, ,,	111

Urine contained 2·3 g. of galactose during the following four hours.
Diastase: 28 units; bile salts and bile pigments: positive; urobilin: negative.

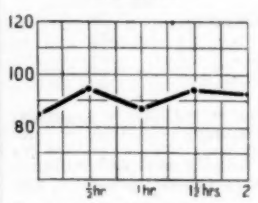
In this case the dominant clinical and laboratory findings pointed to an obstructive type of jaundice, but the somewhat positive galactose test was later substantiated by the autopsy, showing large secondary carcinomatous deposits in the liver tissue itself.

If the cause of the jaundice is known, such as a stone in the duct, and the patient yields a very positive result, this signifies that there is some derangement of the liver parenchyma, and this may explain many cases which do not progress rapidly after cholecystectomy, &c. The test can, therefore, be of value in signifying the state of the liver prior to and after a biliary operation.

Extrahepatic Jaundice.

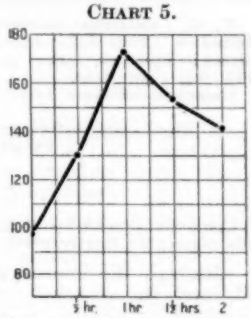
Negative results are not only obtained in mechanical cases, but also in extrahepatic cases of jaundice, such as pernicious anæmia, which indeed is a true hyperbilirubinæmia, also acholuric jaundice and in those cases of jaundice which develop after a hæmothorax or hæmoperitoneum. It is in these types that one is so anxious to know whether an infection has occurred and if the liver is involved—a complication which would be followed by a disastrous prognosis—and it is in these types that the galactose test is equally negative, giving proof that the liver cell is not involved and that the condition is a mere transient hyperbilirubinæmia, a state entirely due to the increased breaking down of the extravasated hæmoglobin by the endothelial cells, and forming bilirubin. Pernicious anæmia does not give consistent negative results; it may be markedly positive in the terminal stages, due to the fatty degeneration present in the liver parenchyma.

CHART 4.



Galactose test in an early case of pernicious anæmia.

CHART 5.



Galactose test in an advanced case of pernicious anæmia.

Chart 4 shows the negative curve obtained in a case of pernicious anæmia—an early case which contrasts with the more advanced case, in which presumably the fatty changes that have occurred in the liver render that organ incompetent, as shown in Chart 5.

T. B. Pernicious anæmia (extrahepatic type of jaundice). An early case with: red blood cells: 3,950,000; white cell count: 6000; colour-index: 1·1; Achlorhydria. van den Bergh: indirect; Fouchet: negative; cholesterol: 110 mg. per cent.
Galactose tolerance test:—

	mg. per cent.
Blood-sugar before administration	86
,, ,, ½ hr. after ,,	95
,, ,, 1 ,, ,, ,,	89
,, ,, 1½ ,, ,, ,,	93
,, ,, 2 ,, ,, ,,	91

Urine: free from sugar. No bile pigments or salts. No urobilin.

Chart 5 shows the advanced condition with marked galactose intolerance.

N. T. Pernicious anæmia. (Extrahepatic type of jaundice). An advanced case with great dyspnœa, œdema and anæmia. Red blood cells: 2,140,000; white cell count: 5700; colour-index: 1·0. Achlorhydria. van den Bergh: indirect; Fouchet: negative; cholesterol: 92 mg. per cent.

Galactose tolerance test:—

	mg. per cent.
Blood-sugar before administration	88
" " ½ hr. after "	130
" " 1 " " "	172
" " 1½ " " "	153
" " 2 " " "	141

Urine: 2.3 g. of sugar. No bile pigments or salts. Urobilin: positive.

Toxic Jaundice.

The most marked positive results are obtained in catarrhal jaundice. Bauer states that phosphorus poisoning and acute yellow atrophy give very high values; no cases of this kind are included in this series. In catarrhal jaundice the result is positive in the very earliest stages, and may persist for a much longer time than the clinical state indicates. Indeed in some cases it may remain positive for a prolonged period, and, in this connexion, it is interesting to note that the German workers believe it is at this stage that many a cirrhosis begins to develop. Chart 6 shows a typical catarrhal jaundice with pronounced intolerance.

U. R. Catarrhal jaundice (hepatitis). Fever, malaise. Jaundice. Four days' duration. van den Bergh: delayed direct; Fouchet test: positive (weakly); cholesterol: 141 mg. per cent.

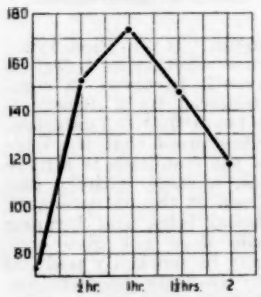
Galactose tolerance test:—

	mg. per cent.
Blood-sugar before administration	72
" " ½ hr. after "	151
" " 1 " " "	174
" " 1½ " " "	147
" " 2 " " "	119

Urine contained 2·7 g. of galactose. Bile salts: negative; bile pigments: faintly positive; urobilin: positive.

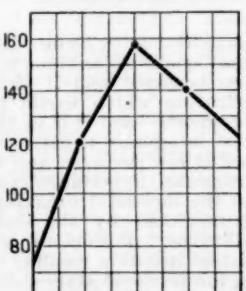
Although the icterus was hardly noticeable clinically and the Fouchet test was faintly positive, the galactose test shows a marked degree of cellular derangement in the liver itself.

CHART 6.



Galactose test in a case of typical catarrhal jaundice with pronounced intolerance.

CHART 7.



Galactose test in a case of catarrhal jaundice.

Chart 7 shows the curve obtained in a young person (25) who suffered from an attack of catarrhal jaundice. The jaundice was deep and the van den Bergh reaction direct, pointing to an obstructive lesion—25 units. Bile salts and pigments were present in the urine, but the positive galactose test showed some cellular derangement, demonstrating that although the turgescence and temporary blockage of the ampulla of Vater may play an important part in certain cases in producing the icterus, the liver cell is undoubtedly affected even in this type.

N. W. Catarrhal jaundice, clinical jaundice, malaise, and fever. Fouchet test: positive; van den Bergh: direct, 25 units.

Galactose tolerance test:—

	mg. per cent.
Blood-sugar before administration	74
" " ½ hr. after "	121
" " 1 " " "	159
" " 1½ " " "	140
" " 2 " " "	121

Urine: Bile pigments: positive; Bile salts and urobilin: negative; Sugar: 2·5 g.; Diastase: 23 units.

Syphilis.

Syphilis also gives positive results. The secondary stage may yield high results when there is no jaundice present, and here it could be used as a guide before embarking upon strong antisyphilitic treatment. In those cases in which the administration of arsenic has resulted in jaundice, the degree of inefficiency is shown by a positive galactose test. One case is included here which showed a marked positive result during an attack of jaundice—a boy who had an enlarged liver and a positive W.R. The marked general improvement that was seen after the administration of mercury and potassium iodide for a month was shown equally well by the galactose test. (Charts 8 and 9.)

CHART 8.

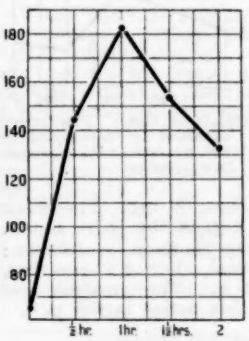
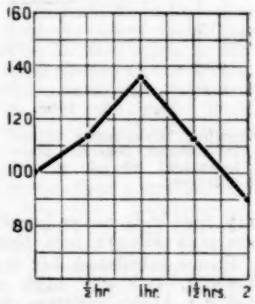


CHART 9.



Galactose test in a case of syphilis before (Chart 8) and after (Chart 9) the administration of mercury and pot. iod.

R. B. Jaundice, four attacks in three months. At time of investigation: van den Bergh: indirect, 3·5 units; Fouchet test: positive; Cholesterol: 105 mg. per cent.

Galactose tolerance test (30 g. given):—

	mg. per cent.
Blood-sugar before administration	64
" " ½ hr. after "	144
" " 1 " " "	182
" " 1½ " " "	152
" " 2 " " "	133

Urine: contained 5·6 g. of galactose; bile pigments, bile salts, and urobilin: positive. W.R.: positive. HG and KI given.

One month later again investigated, when the icterus had vanished, with a no longer palpable liver.

Galactose tolerance test:—

	mg. per cent.
Blood-sugar before administration	100
" " ½ hr. after "	114
" " 1 " " "	138
" " 1½ " " "	112
" " 2 " " "	90

Urine contained 1·4 g. of galactose.

The greatest difference now is 38 mg., whereas before treatment it was 118 mg.

Cirrhosis.

Cirrhosis of the liver yields variable results, and this is doubtless due to the hypertrophy that exists in this condition. As enlarged cirrhotic liver is more likely to give a negative result than a small atrophic one. Included in the series is a case of strong alcoholic history with much ascites but little emaciation or sign of toxicity. (Chart 10). The galactose test

was normal, showing that the hypertrophy was overbalancing the abnormality, and the fibrosis was mainly portal. The bromsulphalein test was also negative.

M. W. Cirrhosis of liver. Much ascites. No jaundice. No emaciation. No evidence clinically of any toxicity. van den Bergh: indirect, 2 units; Fouchet test: negative; cholesterol: 83 mg. per cent.

Galactose tolerance test:—

	mg. per cent.
Blood-sugar before administration	105
" " ½ hr. after "	137
" " 1 " " "	140
" " 1½ " " "	141
" " 2 " " "	141

Amount of sugar lost: 1.7 g. Bile salts, bile pigments, and urobilin: negative. Bromsulphalein test: completely negative.

The prognosis in this case is much better than in the following one. Here, although the ascites is a tremendous burden to the man, there is far less evidence of a liver cell destruction than in the case of A. B. (Chart 11), which shows such galactose intolerance.

If an operation for cirrhosis were devised in which the ascites were relieved, this would be the type of case which would yield good results.

Charts 11 and 12 show the opposite condition, in which, although the clinical findings were far less definite, the ascites only being present in one, and the liver not enlarged in either, yet the galactose test yielded very positive figures. In these cases the symptoms were more prominent than the signs. A fatal complication and an early termination would be more likely in such cases than that of Chart 10.

A. B. Cirrhosis of liver. Fouchet test: negative; van den Bergh: indirect (weakly); cholesterol: 131 mg. per cent.

Galactose tolerance test:—

	mg. per cent.
Blood-sugar before administration	94
" " ½ hr. after "	161
" " 1 " " "	182
" " 1½ " " "	210
" " 2 " " "	186

Urine: Sugar: 3.5 g.; bile salts: negative; bile pigments: positive; urobilin: negative.

CHART 11.

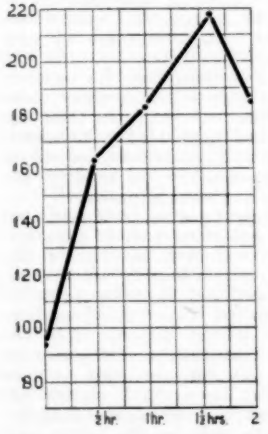
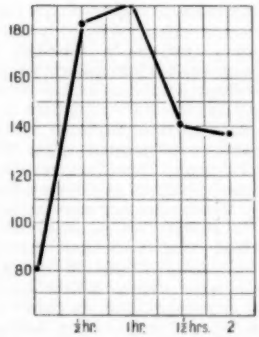


CHART 12.



CHARTS 11 and 12.—Galactose test in cases of cirrhosis of the liver with marked intolerance.

The clinical condition of the patient was bad. The liver as shown by the galactose test was incompetent, and a termination would be expected sooner than in the case preceding, in which there must have been a fair degree of hypertrophy although the ascites was very marked.

A. L. Cirrhosis of liver. Portal obstruction. Jaundice. Caput medusæ. Fouchet test: strongly positive; van den Bergh: indirect; cholesterol: 95 mg. per cent.

Galactose tolerance test:—

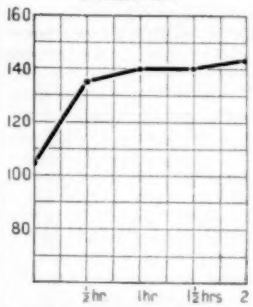
	mg. per cent.
Blood-sugar before administration	80
" " ½ hr. after "	181
" " 1 " " "	190
" " 1½ " " "	140
" " 2 " " "	137

Urine contained 3 g. of galactose in three hours. Bile pigments: positive; bile salts: negative; urobilin: positive.

This is a case showing marked hepatic inefficiency.

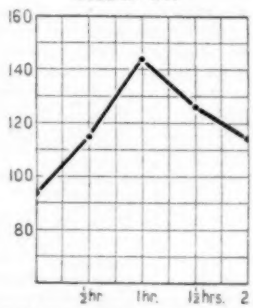
Chart 13 shows a positive galactose result in a case of carcinoma mammæ—a jaundice which developed during the patient's convalescence after an amputation of the breast. The investigations were unfortunately

CHART 10.



Galactose test in a case of cirrhosis of the liver with ascites.

CHART 13.



Galactose test in a case of carcinoma mammæ with post-operative jaundice.

delayed until the icterus had almost subsided, but the findings pointed more to a toxic condition (a hepatitis) than a true mechanical one. The patient became quite well in a few days.

R. P. Carcinoma mammæ. Jaundice post-operative. Is the jaundice due to secondary deposits in liver? or due to a benign coincident catarrhal jaundice? Fouchet test: negative; van den Bergh: two units.

Galactose tolerance test:—

	mg. per cent.
Blood-sugar before administration	94
" " ½ hr. after "	116
" " 1 " " "	145
" " 1½ " " "	128
" " 2 " " "	115

Urine: Bile salts and pigments: negative; urobilin: faintly positive.

Although the evidence is slight, the facts point to a toxic type rather than an obstructive. The after history proved that this condition was a transient hepatitis.

Bauer has shown that in exophthalmic goitre a positive result can be obtained, but in this connexion it must be remembered that he only noted the amount lost in the urine, and glycosuria is not by any means uncommon in this condition.

In this series all cases of jaundice were examined in the following order:—

(1) Duration. (2) Clinical diagnosis. (3) Blood: Urea, Non-protein nitrogen, uric acid, cholesterol, van den Bergh, Fouchet, galactose tolerance test. (4) Urine: bile salts, bile pigments, urobilin, diastase, sugar.

Armed with the results of these tests, one can arrive at a diagnosis which is within the range of great probability. It would be impossible to mistake an incipient jaundice due to neoplasm for a jaundice due to a benign catarrh. Also, in those cases which have a lithitic history with radiographic confirmation, if the tests are positive, they give due warning of a derangement of the hepatic cell itself. The blood-urea and non-protein nitrogen, &c., have been done to give an assurance that the nitrogen eliminating powers of the kidney are functioning.

The *cholesterol estimation* has proved to be of great value. It would be unwise to draw any such conclusions as that the patient has one or more gall-stones or a cholecystitis from the cholesterol

estimation alone, but as surely as the content is high—i.e., not less than 180 mg.—it points strongly to an obstructive jaundice. In only one other condition are such high cholesterol figures obtained, and that is the nephrosis of Epstein. Cholesterol, like the bile salts, passes in a circle through the blood—>liver—>ducts—>intestine—>blood, with a variable loss in the fæces. In obstructive jaundice this route is impeded, and there is a consequent damming back in the circulation, producing a high figure. The hypercholesterolæmia that is supposed to be present in cases of cholecystitis has not been confirmed—in fact, the gall-bladder can be full of pathological conditions, the patient can be persistently fed with cholesterol containing substances, as long as the ducts remain patent, little increase can be made out in the cholesterol content of the systemic circulation.

Some cholesterol estimations obtained in various diseases are here appended :—

		mg. per cent.
H. R. ..	Gall-stones and cystitis	111
E. W. ..	Jaundice—carcinoma pancreas	250
A. L. ..	Cirrhosis of liver	95
F. G. ..	Enlarged liver without icterus (cirrhosis)	78
R. B. ..	Syphilitic liver	105
M. U. ..	Obstructive jaundice	305
H. H. ..	Cirrhosis	109
M. C. ..	Malignant jaundice (obstructive) ..	212
M. M. ..	Toxic jaundice	140
M. N. ..	Cirrhosis	83
B. M. ..	Nephrosis (28/10/25)	517
	(6/11/25)	444
	(24/11/25)	240
C. T. ..	Diabetes	127
F. T. ..	Diabetes—diabetic coma	210
J. S. ..	Obstructive jaundice	340
P. A. ..	Pernicious anæmia	97
A. ..	Obstructive jaundice	333
	Addison's disease	78
	Carc. breast, sec. liver, obstructive jaundice	308
A. B. ..	Cirrhosis	131
D. T. ..	Acholuric jaundice	145

It can be seen, therefore, that in cases of jaundice, if the cholesterol is above 180 mg. per cent., it points to an obstructive type.

Van den Bergh Reaction.—The utility of this reaction has not proved to be proportional to the initial reputation it gained. Although extremely disappointing in the laboratory, and being definite only when there are at the same time definite diagnostic facts equally well observed at the bedside, it has nevertheless brought into prominence Aschoff's work on the reticulo-endothelial system. It has also brought to light the extrahepatic type of jaundice, and has made it possible to estimate the bilirubin content of the serum—an estimation undoubtedly of great value. Success has not resulted when an attempt has been made to differentiate the various types of jaundice by the intensity of colour and time of appearance. The only satisfaction that can be obtained is whether the van den Bergh is direct or not—to be able to diagnose and divide into any further groups is highly hypothetical. The use of caffeine sodium salicylate to enhance the colour of the diazo-reaction has also yielded little profit. Further studies are now being carried out on the constitution of the bile pigments in various types of sera, and an attempt is being made to ascertain the difference between the bilirubin that has passed through the hepatic cell and that which has not passed, a difference which becomes almost doubtful, except for a possible difference in quantity or a difference intimately related to the duration of the jaundice. It is known already how easily bilirubin changes to biliverdin—how the marked changes in colour occur when the reaction is changed—how even the reaction (alkali or acid) of stomach contents that are tinged with bile can be judged by the green or blue colour of the contents. It is possible that similar colour changes—but quite intermediate—occur in bilirubin in sera in various conditions and during various stages of the jaundice. These or other facts may explain the uncertain colour changes observed in alcoholic extractions that have been advocated as differentiating facts, but which have so frequently proved valueless. Except therefore for the estimation of the degree of bilirubinæmia, little proof has been forthcoming that the van den Bergh reaction adds any more information in the diagnosis of jaundiced cases. It is indeed manifest to an observer who has attempted any work on the condition of jaundice how delicate the eye sense is, and how little is gained by any further laboratory investigations of the pigment by the van den Bergh reaction.

Fouchet Test.—This test is always regarded by all who have experience of it to be highly valuable. It was introduced to demonstrate the presence or absence of a pathological degree of bilirubinæmia. It is supposed to show an amount of 1 to 60,000, but it promises to be even more delicate.

Bile salts in the urine indicate the jaundice to be of obstructive origin. Bile salts are sometimes found to be present when no icterus is present—dissociated jaundice of the French—this is little understood.

Urobilin.—The presence or absence of urobilin in the urine has proved to be of great value; if present it generally supports the diagnosis of a jaundice to be due to some toxic state; in mechanical cases it is always negative.

A *diastase* content in the urine of over 50 units assists in attributing the cause of the icterus to a primary pancreatic lesion

Example of icterus due to obstruction :—Blood: van den Bergh reaction: direct immediate; cholesterol content: 220 mg. per cent.; galactose tolerance test: 100, 110, 121, 109, 94. Urine: urine sugar: less than 1 g.; bile salts and pigments: positive; urobilin: negative.

Example of an icterus toxic in character (catarrhal jaundice).—Blood: van den Bergh reaction: indirect; cholesterol content: 126 mg. per cent.; galactose tolerance test: 94, 120, 160, 145, 126. Urine: sugar content in three hours: 5·5 g.; bile salts: negative; bile pigments and urobilin: positive.

Example of an extrahepatic jaundice (pernicious anæmia).—Blood: van den Bergh reaction: indirect; cholesterol content: 97 mg. per cent.; galactose tolerance test: 94, 112, 108, 99, 81. Urine: No galactosuria; bile salts, bile pigments, and urobilin: negative.

The three cases detailed are examples of the three great divisions of jaundice, and the galactose test yields positive results in the second group only.

The two factors to note in the galactose tolerance test are the maximum difference obtained in the blood-sugar level and the amount in grammes of reducing substance present in the urine. A difference of over 30 mg. in blood-sugar indicates some positive degree; frequently as much as 160 mg. difference is obtained. The second factor is the amount in grammes lost out of the 40 g. ingested, and which must always be estimated. Any amount of over 2 g. proves a decided hepatic deficiency. As the threshold for galactose is less than that for glucose, sugar appears in the urine with a blood-sugar value that is often not higher than 130 mg., so that one sees quite frequently a small degree of galactosuria even in health after the administration of 40 g. In small children it is customary to modify the dose, but no rigid standard has been adopted.

Summarising the pathological states, it is seen that in *obstructive jaundice* the galactose test is negative, but the van den Bergh reaction is direct, the cholesterol content is high, and bile salts are present in the urine, while in *toxic and infective jaundice* (including the hepatitis called catarrhal jaundice) and in any other lesion of the hepatic cell the following are the salient features: a difference of blood-sugar far exceeding 30 mg. per cent., a loss of over 2 g. in the urine, a normal cholesterol content, a van den Bergh reaction which is indefinite, with generally bile pigments only in the urine, and lastly, an urobilin reaction which is strong in degree.

In *extrahepatic jaundice* the main features are on the negative side—a negative galactose test, absence of urobilin in the urine, and the normal cholesterol content being the main aids in diagnosis.

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A STUDY OF THE LÆVULOSE TOLERANCE TEST FOR HEPATIC EFFICIENCY.*

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THE use of lævulose as a means of testing hepatic efficiency was first suggested by Strauss [1] in 1901. The original test depended upon the detection of lævulosuria after the oral administration of 100 g. of the sugar. Strauss concluded that the presence of lævulose in the urine indicated an impairment of the liver function. In 1912 Schirokauer [2] demonstrated that the administration of lævulose to a normal fasting subject caused little or no rise in the blood-sugar curve; cases of obvious disease of the liver, on the other hand, showed a definite rise. MacLean and de Wesselow [3] reaffirmed this discovery in their important work on sugar tolerance in 1920, when they stated that lævulose appeared to be the only sugar which gave no definite rise in the blood-sugar content after ingestion. Spence and Brett [4] gave an admirable description of the lævulose tolerance test in 1921 and concluded that it afforded a valuable means of estimating the actual degree of liver dysfunction. Covell,[5] Tallerman,[6] and other workers have confirmed these results. Still more recently, Finkelstein and Dannenberg,[7] working in St. Louis, have given their opinion as to the value of the test. Greene, Snell, and Walters,[8] on the other hand, have concluded, in a recent survey of tests for hepatic function, that the clinical importance of the lævulose tolerance test is still undecided.

The present study is based upon an investigation of 53 cases and was undertaken with the view of determining the clinical value of the lævulose tolerance test in various types of liver disease.

Theoretical Basis of the Test.

It has been shown that the animal body has practically no tolerance for lævulose when it is perfused continuously into a superficial vein.[9] Almost the whole of the sugar thus introduced into the circulation is immediately excreted by the kidneys. When, however, lævulose is given by the mouth it is found that a considerable dose can be tolerated without giving rise either to a recognisable increase in the blood-sugar or to any marked degree of lævulosuria. In the former instance it is clear that, owing to its direct access into the systemic circulation, comparatively little of the lævulose can be subjected to the action of the liver. In the latter instance, however, all the lævulose which is absorbed from the intestine must first pass through the portal system to the liver before it can gain entrance to the systemic circulation. The natural interpretation of these facts is that the liver alone has the power of building up and storing lævulose. In fact, as Sir Humphry Rolleston has noted,[10] lævulose is the only carbohydrate of which the metabolism cannot be carried on elsewhere in the body than in the liver. It may be stated in brief, therefore, that normally there is little or no rise in the blood-sugar curve following the ingestion of a given amount of lævulose.

The sequence of events is far different, however, in the case of gross liver disease, whether due to degeneration, atrophy, inflammation, or new growth. In these circumstances the liver cells are either partly destroyed or rendered individually less capable of function. They are therefore unable to deal efficiently with the lævulose after it is absorbed from the intestine. Consequently, the sugar evades polymerisation and escapes from the portal into the systemic circulation, there giving rise to a marked increase in the blood-sugar content, the extent and duration of which may be regarded as indicative of the degree of liver damage.

It is clear that three factors, apart from the activity of the liver, will tend to influence the height attained by this blood-sugar curve:—

In the first place the rate of absorption from the gut must be considered. In cases where chronic inflammation or atrophy of the mucous surfaces is present, the rate of absorption will be correspondingly slow, and the concentration of lævulose in the blood at any given time will be relatively lower than in cases with healthy mucous membrane.

Secondly, the pancreas has a very intimate connexion with certain stages in the metabolism of sugars in the animal body. Clearly, then, an anomalous result might be obtained by exhibiting lævulose in a case of pancreatic deficiency. This possibility must be excluded, if need be, by separately determining the glucose tolerance. A reaction to lævulose can only be taken as abnormal if there is no evidence pointing to pancreatic disorder.

Finally, the rate of elimination of the sugar from the blood must have a definite reaction upon the height of the lævulose curve. Elimination is mainly effected by the kidneys, and in some cases is much more rapid than in others. In passing, it may be noted that the threshold for lævulose is considerably lower than that for glucose. Lævulose can be detected in the urine after quite small degrees of rise above the fasting level of blood-sugar.

It is important that these three factors should be borne in mind in interpreting the results of the lævulose tolerance test.

Technique of the Test.

For routine work, the custom has been to order the patient to starve from midnight. Eight or nine hours later a sample of blood is taken for the purpose of estimating the fasting sugar level. To an average adult a dose of 45 g. of lævulose, dissolved in 100 c.cm. of water, is then administered by mouth, and samples of blood are collected thereafter at accurate half-hourly intervals for two hours. Specimens of urine are also taken before the test and at each hour during its progress. Finally, the percentage of sugar is estimated in each of the samples of blood and a curve is plotted indicating the result in graphic form. The specimens of urine are also examined both qualitatively and quantitatively for lævulose, but in practice this procedure has been found to be of little additional value when once the blood-sugar curve is known.

The blood-sugar estimations have all been performed on 0·2 c.cm. of blood taken from one of the fingers into a finely graduated pipette. The method of estimation employed has been the colorimetric one described in 1919 by Folin and Wu,[11] the necessary volumetric modifications being made to allow for the smaller amount of blood utilised. For practical purposes this method has been found quite as accurate as that involving venepuncture—and certainly much less trying to the patient. It is to be noted that the sugar estimations include the sugar normal to the blood, together with the superadded lævulose content. It is impossible to estimate lævulose separately in the blood—neither would any useful purpose be served in so doing, for since the reducing power of lævulose so very nearly corresponds with that of glucose, the estimation of the combined sugar value of the blood is for all ordinary purposes sufficiently accurate.

It has not been found necessary to make any fine adjustment of the dose of lævulose to the body weight. In the majority of adult cases a routine dose of 45 g., as suggested by Tallerman,[6] was found satisfactory.

Results in Normal Cases.

Before attempting to apply the test to known instances of liver disease, it was decided to make observations on a series of normal cases. Accordingly, ten such cases were investigated, and the results

* This investigation was carried out under the auspices of the Eliza Ann Alston Research benefaction.

are recorded in Table I. All the cases were apparently normal, healthy individuals and they volunteered readily for the test.

TABLE I.—*Series of Normal Cases.*

No.	Sex.	Age.	Blood-sugar %. Before.	In ½ hr.	In 1 hr.	In 1½ hr.	In 2 hr.	Height of rise.
								mg.
1	M.	35	0·091	0·100	0·100	0·099	0·098	9
2	M.	23	0·080	0·087	0·086	0·083	0·080	7
3	M.	25	0·098	0·101	0·098	0·085	0·083	3
4	M.	45	0·094	0·096	0·094	0·094	0·094	2
5	M.	45	0·101	0·107	0·110	0·107	0·104	9
6	F.	20	0·114	0·121	0·117	0·115	0·114	7
7	F.	17	0·107	0·125	0·121	0·114	0·107	18
8	M.	31	0·101	0·104	0·107	0·101	0·101	6
9	M.	58	0·098	0·104	0·110	0·105	0·098	12
10	M.	33	0·089	0·091	0·094	0·091	0·085	5
Average =			0·096	0·104	0·104	0·099	0·096	8

It will be noticed that in each case, after the administration of lævulose, there is a slight rise in the blood-sugar curve. To facilitate reference, the height above the fasting level of the peak of the curve is expressed in the final column of the table as milligrammes of sugar per 100 c.cm. of blood. Within an hour and a half or two hours there is almost invariably a return to the fasting level. Cases 1 and 5 are the only exceptions to this, and in these the variation is so small as to be within the limits of experimental error. In Case 3 considerable muscular work was undertaken during the second hour of the test, thus explaining a drop of the blood-sugar below the original fasting level. In five of the cases no lævulose whatever could be detected in the urine during the test. In the remaining five (Nos. 1, 2, 5, 7, and 9) there was very slight reduction of Fehling's solution and a faintly positive Seliwanoff reaction. This demonstrates the remarkably low renal threshold for lævulose.

The results of all these cases have been coördinated together to form an average normal curve, a reproduction of which is given in Chart 1. This curve represents a rise of 8 mg. above the fasting level. It will be taken as expressing the reaction to lævulose of a normal, fasting individual and will be referred to later in considering certain abnormal instances. The fasting level of the blood-sugar varies considerably in different individuals—and even in the same individual at different times. In estimating the lævulose tolerance the important factor to determine is, not so much the highest actual percentage of sugar present in the blood at any one time during the test, as the height of rise of the blood-sugar curve above the fasting level.

Results in Abnormal Cases.

These results are expressed in tabular form in Table II. According to the height and duration of the curves obtained, the degrees of impairment of the liver function have been assigned as slight, moderate, marked, severe, and extreme. In almost every case a parallel determination was made of the bilirubin content of the serum according to the method suggested by van den Bergh [12] and described by McNee.[13] [14] This was of special interest in showing a definite degree of latent jaundice in many of the cases in which there was no jaundice clinically.

The cases may be considered in various groups.

1. *Portal Cirrhosis.*—Twelve instances of this disease were investigated (Nos. 11–22). In every case the lævulose curve reached an abnormal height, the maximum being usually obtained one and a half hours after the commencement of the test. In no case was there a return to the fasting level by the end of the second hour. A definite degree of jaundice (often not evident clinically) was also demonstrated in most of the cases by the bilirubin content of the serum. Case 18 was a very early cirrhosis of the liver discovered at operation for another condition. The curve is not very high, but it is interesting in that it continues definitely to rise at the end of the second hour. There was no clinical evidence of cirrhosis in this patient. Case 20 is of interest as showing the highest curve obtained in any patient of the series. The patient was suffering from cirrhosis and perihepatitis; ascites constantly recurred and he had been tapped 69 times when the test was performed. The result is shown graphically in Chart 2.

2. *Syphilitic Cirrhosis of Liver.*—There was abundant evidence of this condition in Case 23. It will be seen that the test indicated a marked impairment of the liver function. There were 3·6 units of bilirubin in the serum, as compared with 0·4 units in the normal subject.

3. *Splenomegalic Cirrhosis.*—A high degree of lævulose intolerance was exhibited in Case 24; death occurred a few months later. Cases 25, 26, and 27 also showed varying degrees of liver inefficiency.

4. *Malignant Disease.*—Several instances of carcinoma of the biliary passages, pancreas, and stomach were investigated (Cases 28–39). In Case 28 the diagnosis of catarrhal jaundice was originally made. There was a painless onset of jaundice and a smooth enlargement of the liver. The lævulose intolerance was marked and the bilirubin content of the blood was high (27 units). A fortnight later the lævulose tolerance test was repeated and a slightly more abnormal result obtained (see Table II.). Meanwhile, the bilirubin content of the serum had progressed to 54 units. A provisional diagnosis of carcinoma of the head of the pancreas was then made and a few days later this was confirmed by the appearance of nodules of secondary growth on the surface of the liver. Post mortem the liver was riddled with secondaries. Other cases also showed diminished lævulose tolerance and in those instances which came to post mortem the liver was found to be invaded by masses of secondary carcinoma. In Case 35 the gall-bladder was found at operation to be full of purulent material. This element of infection no doubt partly accounted for the extreme degree of liver inefficiency denoted by the test. In cases of carcinoma of the stomach it seems probable that a useful application of the test would be to determine the presence of secondary deposits in the liver (Case 37). An unnecessary laparotomy might be avoided if the lævulose tolerance test denoted a marked degree of liver impairment.

5. *Catarrhal Jaundice.*—Case 40 is one of great interest. The patient, a well-developed man of 33, was recovering from an attack of influenza for which he had been treated at home. A week before admission to the hospital he complained of malaise and slight shivering attacks. Two days before admission he lost all taste for food, vomited once, and began to experience a heavy feeling in the upper abdomen. On admission he was slightly jaundiced and the urine contained bile. The bowels had not been open for two days. There were no enlarged glands and the liver and spleen were not palpable. The jaundice increased for a week and then began to improve. A week later the jaundice recurred, but from that time there was gradual improvement. A month later the patient was discharged with only a faint remaining trace of jaundice. The lævulose tolerance was determined just after the acute stage of the attack and again after recovery. The results are expressed in Chart 3. There seems to be definite impairment of the function of the liver at the height of the disease, which passes off as recovery takes place. If catarrhal jaundice is pathologically an obstructive inflammation of the common bile-duct with consequent retention of bile, one would not necessarily expect any lessening of the activity of the liver cells in metabolising lævulose—but such is the case. It seems at least probable therefore that catarrhal jaundice is due

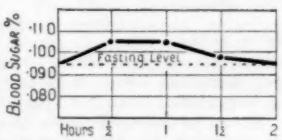

CHART 1.—Average normal curve.

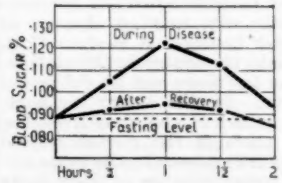

CHART 3.—Catarrhal jaundice.

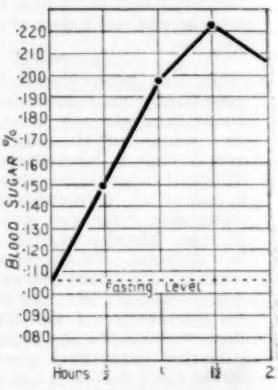

CHART 2 (Case 20).—Severe impairment.

to a mild infection of the liver itself and is not dependent entirely upon an obstructive cholangitis.

6. *Acute Cholecystitis.*—An acute infective process in the gall-bladder seems to have a secondary influence upon the functioning power of the hepatic parenchyma. In Case 41 a considerable impairment of the liver efficiency is indicated.

7. *Chronic Cholecystitis.*—This condition, on the other hand, has little or no adverse influence on the liver. Case 42 shows a curve which approaches the normal. In this case it was ascertained that a small, thickened gall-bladder, filled with stones, was present.

8. *Acute Cholangitis.*—These cases show diminished liver efficiency, probably due to back-spread of the infection. Case 44 is interesting from this point of view. The patient was a female, aged 34; for 15 years there had been symptoms of chronic cholecystitis, together with a history of two attacks of gall-stone colic. A large chronically inflamed gall-bladder full of stones was removed, and the patient was discharged to a convalescent home. A few weeks later she returned with pyrexia, rigors, and night sweats. The rigors continued in the ward, jaundice developed, there was bile in the urine, and the fæces were pale and bulky. Dullness appeared at the base of the right lung, and the liver dullness showed signs of enlargement. Either subphrenic abscess or cholangitis was suspected. Blood cultures were sterile, there was no leucocytosis, and no fluid or pus was obtained on needling in the region of the right base. There was marked diminution of the lævulose tolerance (see Chart 4A). Cholangitis was accordingly diagnosed and the patient was treated with urotropine. There was immediate improvement, the temperature settled, and the jaundice began to clear. Later the patient was transferred home with no pyrexia but slight jaundice. When last seen the jaundice was slowly increasing (probably the result of some stenosis of the common bile-duct), but the temperature remained normal and the general condition was very satisfactory. At this date the lævulose tolerance was normal (see Chart 4B). In this instance the lævulose tolerance test was of considerable diagnostic importance.

9. *Arsenical Jaundice.*—It is known that arsenical poisoning affects the liver more gravely, perhaps, than any other organ. Consequently, it was not surprising to find that there was an extreme degree of liver damage in two cases in which jaundice developed after the recent injection of an arsenical compound. Both cases were being treated for syphilis. Both recovered (Nos. 46 and 47).

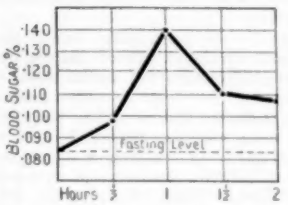

CHART 4 A.—Acute cholangitis (during attack).

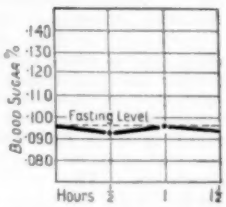

CHART 4 B.—Acute cholangitis (recovery).

10. *Cardiac Failure.*—Observations were made on three such cases. In all of them (Nos. 48–50) there was definite enlargement of the liver. Only very slightly abnormal results were obtained in two cases. In the other no abnormality could be detected. Each case showed a definite degree of hyperbilirubinæmia.

TABLE II.—*Series of Abnormal Cases.*

No.	Sex.	Age.	Diagnosis, &c.	Units of bilirubin in serum.	Blood-sugar %. Before lævulose.	½ hr. later.	1 hr. later.	1½ hr. later.	2 hr. later.	Rise in mg. %.	Impairment of liver function.
11	M.	59	Portal cirrhosis	—	0·083	0·107	0·114	0·144	0·121	61	Marked.
12	F.	63	Perihepatitis; ascites	—	0·098	0·123	0·125	0·121	0·117	27	Slight.
13	F.	39	Portal cirrhosis	—	0·094	0·117	0·129	0·134	0·125	40	Moderate.
14	M.	37	,,	2·7	0·094	0·104	0·129	0·144	0·134	50	Marked.
15	M.	54	Portal cirrhosis; perihepatitis; ascites	3·7	0·096	0·134	0·139	0·125	0·104	43	Moderate.
16	M.	41	Portal cirrhosis	3·6	0·089	0·125	0·147	0·179	0·156	90	Extreme.
17	F.	43	Portal cirrhosis; ascites	7·7	0·085	0·117	0·144	0·163	0·150	78	Severe.
18	M.	56	Early cirrhosis; discovered at operation	1·4	0·096	0·107	0·110	0·117	0·121	25	Slight.
19	M.	45	Portal cirrhosis; severe epistaxis	5·4	0·094	0·110	0·129	0·156	0·125	62	Severe.
20	M.	50	Cirrhosis; perihepatitis; tapped 69 times	6·3	0·107	0·150	0·198	0·221	0·208	114	Very extreme.
21	M.	63	Portal cirrhosis; ascites	6·4	0·083	0·142	0·129	0·114	0·104	59	Marked.
22	M.	42	Portal cirrhosis	—	0·098	0·139	0·150	0·144	0·134	52	,,
23	M.	48	Syphilitic cirrhosis; ascites; W.R. +	3·6	0·098	0·144	0·163	0·163	0·139	65	,,
24	F.	18	Splenomegalic cirrhosis	—	0·072	0·107	0·125	0·163	0·125	91	Extreme.
25	F.	50	,,	—	0·112	0·129	0·145	0·129	0·125	33	Moderate.
26	F.	46	,,	2·6	0·104	0·139	0·156	0·150	0·134	52	Marked.
27	M.	18	Familial splenomegaly; liver enlarged	—	0·091	0·117	0·112	0·101	0·098	26	Slight.
28	F.	37	Carc. of head of pancreas { Early / Later	27·0 / 54·0	0·080	0·117	0·134	0·129	0·125	54	Marked.
					0·083	0·129	0·139	0·125	0·117	56	Increasing.
29	M.	58	,,	32·4	0·101	0·121	0·150	0·150	0·134	49	Marked.
30	M.	56	,,	16·2	0·107	0·150	0·144	0·121	0·114	43	,,
31	M.	50	,,	23·2	0·083	0·150	0·139	0·125	0·107	67	,,
32	M.	48	,, (?)	14·7	0·080	0·104	0·129	0·160	0·156	80	Severe.
33	M.	47	Carc. of ampulla of Vater	59·0	0·104	0·129	0·150	0·163	0·150	59	,,
34	M.	51	,,	31·0	0·091	0·112	0·134	0·150	0·112	59	Marked.
35	M.	64	Carc. of common bile-duct; infected	19·1	0·107	0·129	0·170	0·188	0·188	81	Extreme.
36	M.	62	Carc. of common hepatic duct	29·7	0·078	0·094	0·139	0·134	0·098	61	Marked.
37	M.	61	Carc. of stomach; secondaries in liver	11·6	0·094	0·117	0·144	0·134	0·111	50	,,
38	M.	60	Sec. carc. of liver; ? primary	—	0·085	0·105	0·125	0·118	0·105	40	Moderate.
39	F.	49	Sec. melanotic carc. of liver, lungs, &c.	2·0	0·107	0·125	0·150	0·144	0·107	43	,,
40	M.	33	Catarrhal jaundice { During attack / After recovery	19·7 / 11·5	0·089	0·104	0·121	0·112	0·091	32	,,
					0·089	0·091	0·094	0·091	0·085	5	Return to normal.
41	M.	53	Acute cholecystitis	3·0	0·087	0·125	0·125	0·117	0·114	38	Moderate.
42	F.	57	Chronic ,,	1·4	0·106	0·120	0·120	0·115	0·106	14	Little or none.
43	M.	37	Acute cholangitis { During attack / After recovery	7·2 / 1·1	0·082	0·117	0·112	0·101	0·094	35	Moderate.
					0·098	0·104	0·101	0·098	0·098	6	Return to normal.
44	F.	34	,, ,, { During attack / After recovery	2·5 / 7·2	0·083	0·098	0·139	0·110	0·107	56	Marked.
					0·098	0·096	0·098	0·097	—	0	Return to normal.
45	F.	47	Chronic pancreatitis; cholecystenterostomy	9·2	0·089	0·098	0·104	0·101	0·094	15	Little or none.
46	M.	27	Stabilarsan jaundice; syphilis	14·3	0·096	0·144	0·170	0·150	0·129	74	Extreme.
47	M.	50	Neosalvarsan ,, ,,	32·4	0·104	0·150	0·188	0·170	0·150	84	,,
48	M.	56	Chronic bronchitis; cardiac failure	2·0	0·125	0·144	0·150	0·144	0·139	25	Slight.
49	M.	47	Cardiac failure; liver enlarged	3·0	0·098	0·125	0·121	0·110	0·098	27	,,
50	M.	51	,, ,, ascites	3·0	0·100	0·108	0·104	0·100	0·100	8	Little or none.
51	F.	57	Ovarian cyst; removal	2·0	0·104	0·156	0·163	0·134	0·117	59	Apparently severe
52	M.	58	Chronic gastritis; neurasthenia	0·8	0·098	0·104	0·110	0·105	0·098	12	None.
53	M.	66	Hæmatemesis; ? portal cirrhosis	1·5	0·091	0·125	0·134	0·139	0·144	53	Severe.

11. *Anomalous Cases.*—There was only one anomalous case in the series. In this there was extreme distension of the abdomen and it was impossible to tell whether this was due to free fluid or to the presence of a cyst. Cirrhosis with ascites, ovarian cyst, and hydatid cyst were all suggested as possible diagnoses. The lævulose tolerance was diminished and this seemed to point to the diagnosis of cirrhosis. At laparotomy a huge multilocular ovarian cyst was discovered. The liver was extremely compressed

between the cyst and the diaphragm, but showed no other signs of abnormality (Case 51).

Clinical Value of the Test.

A test for hepatic efficiency may be useful as an aid to diagnosis, as a means of controlling treatment and as a factor in prognosis.

1. *As an Aid to Diagnosis.*—In many cases the diagnosis is often clinically obvious before an opportunity for performing the lævulose tolerance test is offered. In these instances the test is only useful inasmuch as it affords a definite index of the impairment of liver function. In certain cases, however, the test may be of great value in settling a doubtful diagnosis. The case of acute cholangitis quoted above is an example of this. Two other cases will now be quoted in which the test was an important diagnostic factor.

CASE 52.—Male, aged 58; dock labourer. The patient was in hospital nine years previously with a history of abdominal pain but no vomiting. At that time the liver was slightly enlarged. The test-meal showed no free HCl and diminished total acidity. A diagnosis was made of chronic gastritis, (?) hepatic cirrhosis. Eighteen months before readmission there was a return of dyspeptic symptoms accompanied by occasional vomiting. Later there was pain in the upper and lower abdomen accompanied by vomiting. There was no hæmatemesis or melæna; the appetite was fair, but there was some loss of weight. There was no previous history of any serious illness. The patient was a moderate smoker and drinker. On examination he was of healthy appearance, but somewhat neurotic in temperament. The heart and lungs were normal. The liver was not palpable but was slightly enlarged to percussion; no other abnormality was noticed. Rectal examination showed nothing abnormal. The test-meal showed no free HCl and diminished total acidity. Wassermann reaction negative. Radiological examination showed no evidence of any organic lesion of the stomach, pylorus, or duodenum. The lævulose tolerance test was normal. The possibility of hepatic cirrhosis was thus ruled out. (See Chart 5.) The final diagnosis was chronic gastritis.

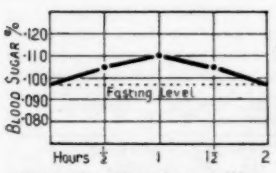

CHART 5.—Chronic gastritis.

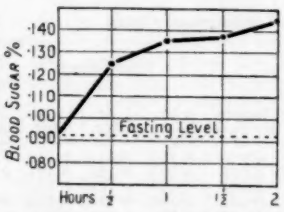

CHART 6.—Hepatic cirrhosis.

CASE 53.—Male, aged 58; costermonger. The patient was quite well until a month before admission. He then complained of pain in the upper abdomen; it was present every day, was not affected by food, and showed no radiation. For a week before admission there was retching and some vomiting. The day before admission he vomited blood twice. There was no previous history of hæmatemesis or melæna. The appetite was good, but there was slight loss of weight. There was no previous history of any serious illness. The patient was a non-smoker, but drank beer moderately.

On examination he was a well-built man but rather pale. The heart and lungs were normal. The abdomen was well covered but not distended; there was slight epigastric tenderness; the liver was enlarged three fingers-breadth below the costal margin. The spleen was not palpable; there was no ascites. Rectal examination showed nothing abnormal. Blood examination showed a moderate degree of secondary anæmia. The Wassermann reaction was negative. The test-meal showed no free HCl and diminished total acidity. Radiological examination showed no evidence of any organic lesion. The lævulose tolerance was much diminished, and on this evidence a diagnosis of hepatic cirrhosis was made. (See Chart 6).

In both these cases it may fairly be claimed that the lævulose tolerance test was one of the most important factors in reaching the diagnosis.

2. *As a Means of Controlling Treatment.*—Two circumstances will be mentioned in which the lævulose tolerance test might be of service in controlling treatment. In cases where carcinoma of the stomach is diagnosed the question at once arises as to the operability of the condition. Secondary deposits in the liver are a definite contra-indication to operation and these cannot always be excluded on clinical grounds. In a case of undoubted carcinoma of the stomach the demonstration of a high lævulose curve would seem to point unquestionably to the presence of secondaries in the liver—and therefore to the inadvisability of laparotomy. Again, in the administration of toxic drugs such as the arsenical compounds, the lævulose tolerance test might furnish valuable information as to the condition of the liver. It is known that liver damage may occur or may be suspected even in the absence of jaundice. In these cases the lævulose tolerance test would undoubtedly be of assistance and might prove of value in determining the dosage of the drug to be employed.

3. *As a Guide to Prognosis.*—The test is of value in this direction in that it furnishes a definite and scientific indication of the actual degree of liver damage.

Conclusions.

1. In a series of 53 cases the lævulose tolerance test for hepatic efficiency has shown consistent results.

2. In ten normal cases the average rise of the blood-sugar curve above the fasting level after a dose of 45 g. of lævulose by mouth was 8 mg. per 100 c.cm. of blood. Normally there was a return to the fasting level within one and a half or two hours.

3. In cases of disease of the liver there was a definitely atypical reaction to a dose of lævulose. The blood-sugar curve was abnormally high and maintained, the peak of the curve being reached about one and a half hours after the commencement of the test. There was no return to the fasting level at the end of two hours. The height and duration of the rise in the blood-sugar was in proportion to the degree of liver damage.

4. The test is therefore of considerable value as an index of the functional capacity of the liver.

5. In certain cases the test may be of considerable practical value as an aid to diagnosis, as a means of controlling treatment, and as a guide to prognosis.

Finally, the writer wishes to express his thanks to the physicians and surgeons of the London Hospital who have permitted their cases to undergo investigation, and to Dr. P. N. Panton and Dr. J. R. Marrack for their kind help and suggestions.

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AMALGAMATION OF BRISTOL HOSPITALS.—It has been decided that the Bristol Royal Hospital for Sick Children shall in future be worked in conjunction with the Bristol Royal Infirmary, and the professional staff amalgamated.

PRINCE OF WALES'S GENERAL HOSPITAL.—This hospital at Tottenham, which, with its home of recovery at Nazeing, has 220 beds, is seriously in need of an extension of its out-patient department, which has not been enlarged since the time when it treated only one-third of the present number of patients. The well-to-do population of the district has been replaced by a working-class one, with grave results to the income.

TWENTY-FOUR CASES OF RINGWORM OF THE SCALP TREATED BY THALLIUM EPILATION.

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THE following brief account of a number of cases of tinea tonsurans treated by means of thallium epilation may be of some general interest. The method is so simple that it is not improbable that this treatment will replace to some extent the more commonly used Rontgen ray epilation.

The action of thallium acetate in producing epilation has been well known for many years, and R. Sabouraud about 30 years ago used the drug for this purpose in the treatment of scalp ringworm. As a result of his experience, however, he concluded that the therapeutic use of thallium was unsafe. Perhaps he used unnecessarily large doses. At all events it was given up.

The credit for placing the treatment on a sound practical basis belongs to A. Buschke, who by means of experimental work on animals, carried out by himself at first and later in collaboration with Bruno, Peiser and others[1] over a number of years, succeeded in determining the exact dose of thallium acetate per kg. of body-weight which is required to produce epilation of the scalp. In the first place, they point out the obvious disadvantages of X ray epilation, particularly in very young children—namely, that unless an exact epilatory dose be given, one of two things will happen: with imperfect technique portions of the scalp may receive too small a dose, epilation will not be complete, and the ringworm will not be cured; with an overdose, however slight, more or less permanent cicatricial alopecia may result. Further, they point to the not infrequent temporary damage to the skin following X ray irradiation. It is particularly difficult, of course, to epilate children under 3 years of age, for such very young children will not usually keep still for the time that is necessary for the epilation dose.

The advantages of making use of the elective action of thallium acetate in producing epilation were obvious, but a dose had to be found that would be non-toxic and yet effective. So after Sabouraud's therapeutic failures, Buschke, and afterwards Buschke in collaboration with Peiser, undertook the experimental work over a period of 20 years which succeeded eventually in establishing the precise dose required and the best method of administration. On the basis of their experiments R. E. Cicero and others in Mexico made practical tests of the use of thallium on a large number of children suffering from ringworm of the scalp; a batch of 345 children were all treated successfully by this means, and equal success was reported in the treatment of a further group of 200 children. Reference is further made to groups of 104 and 40 children treated in Italy, all with success.

Reports of complications by some who have used the method are referred to in these papers, but these have been rare and slight in nature, consisting of slight albuminuria, joint pains, headache, and vomiting. Buschke suggests that these cases may have received too large a dose, and he states that he has himself never observed the smallest ill-effect.

The actual dose of thallium acetate required was established by Buschke to be 8 mg. per kg. of body-weight. Some have used 8–9 mg. per kg. of body-weight. A single dose is given by mouth in sweetened water. The hair begins to loosen in six to eight days, and complete epilation has taken place by the nineteenth day. Buschke also tried the combined effect of thallium and X ray epilation, using 4 mg. of thallium per kg. and 1/3 H.E.D. X rays. The result was prompt and satisfactory epilation, without injury or complication of any sort. Toxic effects have been observed as the result of giving a second dose of thallium; but Buschke thinks that the second dose must have been given too soon. He considers that two and a half months is a necessary period to allow if the first epilation has failed.

[1] A résumé of the experimental work carried out by these authors and of the therapeutic tests made by them and by others may be found in the Dermatologische Wochenschrift of July 3rd, 1926, and in a paper by the same authors in the Urologic and Cutaneous Review, August, 1926.

Report of Cases.

A very few words will suffice to deal with our own results. We have simply followed Buschke's method of administering thallium acetate in sweetened water, giving 8 mg. per kg. of body-weight in some cases, and 8·5 or 9 mg. in others.

We have dealt with 24 cases altogether. At first they were kept under observation for 24 to 48 hours. Later we concluded that this early observation was unnecessary and simply instructed the parents to keep the children in bed for a day. However, as will be pointed out later, confinement to bed during the whole period of treatment may be more desirable. As albuminuria may be a complication of thallium treatment, it is evident that its use in a case suffering from any renal affection is contra-indicated. A preliminary urinalysis has therefore been made in each case. Epilation has been satisfactory in every case treated with 8·5 and 9 mg. per kg.; with 8 mg. epilation has been just short of complete in a few cases. Unfortunately, we have not yet been able to get the biologically standardised thallium acetate used by Buschke, but we intend to obtain this preparation if possible for future use.

The ages of our patients have varied from 2 to 12 years of age. It is hardly necessary to add that epilation of itself does not cure ringworm, and a fungicide ointment has, of course, been used in combination with the thallium treatment. We have found that the hair which begins to loosen after six to seven days falls rapidly at about the twelfth day, and by the nineteenth day epilation is complete except for some sparse unpigmented hairs of the lanugo type which are found particularly near the hair margin, and which never fall. In a few cases it has been found that the infected stumps do not fall as readily as the normal hair, and it has been necessary to resort to other measures to extract them. The same difficulty arises in some cases treated by X ray epilation, and the usual method is to extract these stumps by means of strapping. The method successfully followed in two cases of the present series has been daily application for four days of liq. ferri perchlor. fort. This forms a crust which adheres to the affected areas, and when this is washed off the remaining hairs are extracted. The hair has begun to grow again almost immediately in the form of down. Unfortunately, we are not yet able to state from our own experience how long a period must elapse before full regrowth is established. Buschke, however, states that regrowth has never failed in any case and is usually fully established by three months from the commencement of treatment.

Toxic Effects.

While no toxic symptoms have been noted in the first week of treatment, these unfortunately have not been entirely absent in the second and third weeks. Headache has been observed in one case in the third week, and some loss of appetite and pains in the joints in five cases in the second and third weeks. The knees and feet have been chiefly affected, and in one case the fingers. These symptoms have been relieved by rest in bed. They have lasted for eight to ten days. Curiously, these toxic effects have only become evident in quite recently treated cases, and it appears possible that the explanation may partly lie in the fact that the same thallium preparation

has been used for some six weeks, and may have deteriorated. It seems, therefore, clear that it will be advisable for the future to obtain a freshly made, biologically standardised, and absolutely pure preparation of thallium, in order that the smallest possible effective dose may be given, and to keep the patients in bed during the whole period of treatment.

This treatment will clearly be especially useful: (1) in cases where X ray epilation is undesirable or impracticable, as, for example, in children under 3 years of age. (2) In cases for which X rays have already been used without success. One case may be cited as an example of the latter class.

A girl of 6, an Australian, came under observation 17 days from the time of writing. She had been treated for ringworm of the scalp by X ray about four months before. In this case there had been not only a severe inflammatory reaction as a result of the irradiation but epilation had partially failed, and the ringworm had persisted.

The patient's mother had taken a passage to Australia and it was urgently necessary that she should sail in three weeks. The child was given 8·5 mg. per kg. of body-weight immediately. She has epilated successfully in 16 days. In this case no toxic symptoms of any kind have occurred.

It will be possible to report on a larger group of cases in the near future, including some in which thallium has been used to supplement partially epilatory doses of X ray.

Clinical and Laboratory Notes.

A CASE OF PNEUMOCOCCAL MENINGITIS, WITH COMPLETE RECOVERY FOLLOWING SERUM TREATMENT.

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IN the July issue of the *Archives of Pediatrics*, 1926, two American writers, Ratnoff and Litvac, have described a case of pneumococcal meningitis treated with Morgenroth's optochin hydrochloride. They review the literature of the subject and give a mortality of 95 per cent., and they indicate the lines of treatment in eight reported cases of recovery recorded during the last decade. Their patient, a girl aged 7½ years, was admitted with a provisional diagnosis of cerebro-spinal fever; she was given antimeningococcal serum, and after this, repeated injections of antipneumococcal serum followed by a course of injections of Morgenroth's optochin hydrochloride; recovery resulted.

The following case is therefore of interest in that the patient, a boy of 5, recovered completely, receiving antimeningococcal serum and antipneumococcal serum only.

H. S., a boy aged 4 years 11 months, was admitted to the Belgrave Hospital on July 4th, 1926.

The history was that he was quite well up to the morning of July 2nd, when he came in from play complaining of headache and vomited; the headache and vomiting persisted until his admission. He was one of a family of six, and had previously been in good health. There was no family history of tuberculosis.

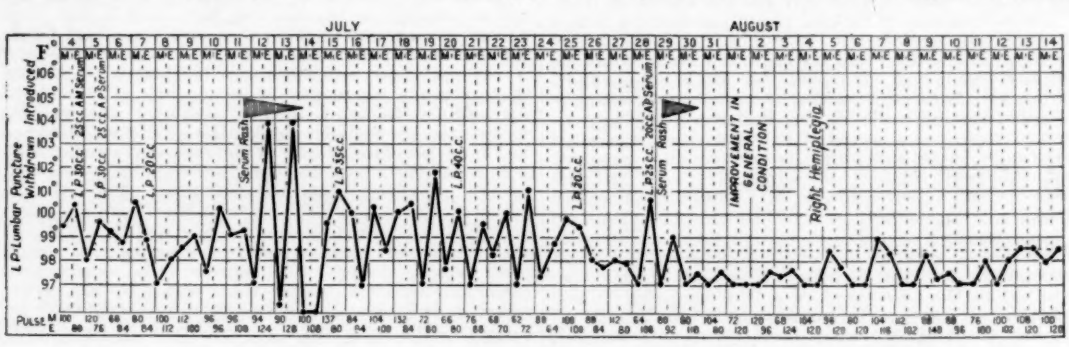
Examination on Admission.—The boy lay curled up in bed on one side, with retracted head and abdomen. Temperature 99·5° F., pulse 88 (irregular), respirations 24. He had labial herpes. He was drowsy and irritable, and cried out when disturbed. At times he lapsed into semi-coma with a divergent strabismus; the pupils were equal and reacted to light; he had marked cervico-dorsal rigidity and Kernig's sign was positive; Tache cérébrale was absent. Reflexes: abdominals brisk; knee-jerks sluggish; ankle-jerks present; plantars flexor. No evidence of disease elsewhere.

Lumbar puncture revealed a turbid fluid under increased pressure; a tentative diagnosis of cerebro-spinal fever was made, and 25 c.cm. of antimeningococcal serum were given intrathecally, 30 c.cm. of C.S.F. being previously withdrawn.

The pathological report was: 540 cells per c.mm.; polymorphs, 80 per cent.; lymphocytes, 20 per cent.; total protein, 0·2 per cent.; chlorides, 0·6 per cent. No glucose. Pneumococci were found in the direct smears and cultivated, but were not typed.

On the next day (July 5th) 30 c.cm. C.S.F. were withdrawn and replaced by 25 c.cm. of polyvalent antipneumococcal serum. Two days later he showed marked improvement; the retraction was less and he began to take an interest in his surroundings; lumbar puncture showed the fluid to be much less turbid but no cell count was done. Four days later (i.e., on the eighth day after admission and his first dose of serum) he had headache, joint pains, a generalised urticarial rash, and was drowsy, but had no head retraction. This serum reaction lasted over two days.

Following the serum reaction, his condition altered very little during the next 14 days; he complained of headache, ran an intermittent temperature, and had slight head retraction; marked constipation was a constant feature. Three lumbar punctures were done during this period and the fluid remained turbid. On July 28th a sensitising dose of antipneumococcal serum was given subcutaneously and later 25 c.cm. of C.S.F. were withdrawn and 20 c.cm. of antipneumococcal serum introduced. An immediate reaction occurred on the following day. The optic discs showed at this stage a slight papilloedema of the left disc. In three or four days he began to show improvement, the temperature settled down, headache ceased, and head retraction became less. On August 4th a right-sided hemiplegia was noticed, involving the arm and leg of that side; the reflexes on the right side were absent, including the abdominals, and the limbs were flaccid. His general condition was good and he took an interest in his surroundings, but could not or would not speak at all. A fortnight after the onset of the hemiplegia he suddenly began to speak, under emotional excitement, his mother being present. From then onwards his speech and hemiplegia made rapid improvement, and in three weeks he gained 6 lb. in weight. On Sept. 10th he was discharged quite well, and "walked out" of hospital.



Temperature chart of a case of pneumococcal meningitis with recovery.

Apparently this was a primary pneumococcal meningitis, though not very acute, in so far as the febrile symptoms were concerned. There was never any evidence of a focus of infection in the ears, fauces,

or respiratory tract, and the labial herpes was such as is frequently seen in pneumonia. In a primary case mentioned by Dr. E. Cautley in his "Diseases of Children," the boy, aged 9 months, had an acute illness which ran a course like that of simple croupous pneumonia, the temperature falling by crisis on the tenth day and ending in recovery. The diagnosis was verified by lumbar puncture, but no serum treatment was adopted. An interesting feature of the above case is the right hemiplegia of flaccid type, associated with an aphasia which cleared up synchronously.

I wish to thank Dr. Cautley for assistance and kind permission to publish this case.

A CASE OF "SONNE" DYSENTERY IN ENGLAND.

BY F. H. A. CLAYTON, M.D., M.R.C.P. EDIN.,
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As a result of his investigation into the occurrence of dysentery in Denmark, Carl Sonne [1] described, in addition to the well-recognised Shiga and Flexner groups, a third variety, found in mild cases, which differed from them both culturally and serologically. The accuracy of his observations has since been confirmed by F. d'Herelle [2] in France, T. Thjötta [3] in Norway, and H. Oehnell in Sweden. A similar organism has been studied in Australia by S. W. Patterson and F. E. Williams [4] and recently a considerable outbreak of illness due to it has been described in Aberdeen,[5] but in England it had not been met with until H. A. Channon [6] in 1925 obtained it from the fæces of a man who gave a history of previous dysentery in Egypt.

The Present Case.

The patient, a lady resident in a seaport town in Durham, appears to have suffered for some time from intermittent attacks of abdominal pain and discomfort. The present exacerbation began early in September, 1926, and was marked by considerable pain on the right side and symptoms sufficiently suggestive of appendicitis to call for a surgical opinion, although operation was not considered advisable. Frequent scanty motions containing blood and mucus and attended by tenesmus then troubled the patient, and on Sept. 8th a specimen of fæces was brought direct to the laboratory of the College of Medicine by a consultant physician of Newcastle-on-Tyne who had been called in. The specimen arrived within an hour or two of its passage.

Under simple treatment the condition soon improved, and in a few days the patient was said to be practically well, and although she has apparently had one or two "threatenings," she has, so far as is known, had no further definite attack.

Examination of the Stool.

Macroscopically the stool seemed to consist almost entirely of mucus and bright blood with a little greenish fæculent matter. Films showed large numbers of polymorphonuclear cells, some macrophages, epithelial and red blood-cells, and a few crystals, but no cysts or amœbæ and but few organisms.

From MacConkey plates, sown with washed flecks of mucus, six out of a considerable number of clear white colonies, were isolated and were found to give, after 24 hours' incubation, the reactions of *Bacillus dysenteriæ* (Flexner) which were maintained for some six days. At about the end of that time a distinct acidity, which persisted, became apparent in litmus-milk, and this was followed by the slow production of acid in lactose and a day or two later in saccharose. No indol could be demonstrated, and agglutination against the Oxford sera for the five strains of *B. dysenteriæ* (Flexner) proved entirely negative. The patient's own serum was then obtained and agglutinated the organism isolated up to 1 in 125, a fact suggesting that infection had predated the present train of symptoms; the serum failed, however, with the five Oxford Flexner emulsions to give more than a very doubtful trace with "Y."

Two strains of the "Sonne" bacillus (Nos. 268 and 269) were obtained from the National Collection of Type Cultures, and were found to give precisely similar cultural reactions, the only difference being that acid appeared in lactose and saccharose a day or two earlier. One cultural characteristic, of which no mention has been seen, but which was noted with all three strains, was the occurrence of lateral branchings in gelatin stabs.

From one of the type Sonne strains (No. 268) and from the organism isolated anti-sera were prepared in the usual manner. Neither appeared to possess great antigenic potency, but no difficulty was experienced in producing, with dead organisms, sera which would agglutinate 24-hour broth cultures up to 1 in 600 or 700. The agglutination is rather fine, as was noted by Thjötta, and is best seen with the Oxford dark-ground apparatus devised for the purpose. Cross-agglutination experiments showed almost identical results with all three organisms except that type strain 268, even with its own serum, seemed slightly less agglutinable than the other two. Cross-adsorption was equally conclusive, as with each serum the heterologous as well as the homologous strain removed practically all the agglutinins for both.

There seems no doubt therefore that this is the "Sonne" bacillus, and inquiry was made as to any connexion with Aberdeen or the Scandinavian countries and whether there was any possibility that residents in the house, either visitors or domestics, coming from these places, might have filled the rôle of carrier. No very definite information was obtained, but it was gathered that the patient herself, her husband—who had also suffered from abdominal symptoms—and an intimate friend, had all, at an unspecified date, been in Aberdeen.

[1] Giftfattige dysenteribaciller, 1914, Copenhagen.
[2] Ann. de l'Inst. Pasteur, 1916, xxx., 145.
[3] Jour. Bact., 1919, iv., 355; 1921, vi., 501.
[4] Jour. of Pathology and Bacteriology, 1922, xxv., 393.
[5] Smith, J.: Jour. Hyg., 1924, xxiii., 94; 1926, xxv., 453.
[6] Jour. Pathology and Bacteriology, xxix., 496.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OTOLOGY.

AT a meeting of this Section held on Feb. 5th Dr. DAN MCKENZIE, the President, occupied the chair, and Dr. E. FARQUHAR BUZZARD contributed a paper (read in his absence by Mr. T. B. LAYTON) on the

Treatment of Traumatic Facial Palsy.

The principles governing the treatment of all lesions affecting the lower motor neurones must, he said, apply to lesions of the facial nerve, but the path of the nerve through the temporal bone, where trauma might be caused, created difficulties which deserved attention. In certain cases it was impossible to say whether the nerve had been completely divided or whether it had been lacerated, bruised, crushed, or merely exposed to inflammation in adjacent tissues. Speaking generally, a facial palsy, the result of a lesion of the nerve in its course through the temporal bone, did not require operation, and all that had to be considered was whether other measures would be likely to help recovery.

There were two main groups of these cases of facial palsy, continued Dr. Buzzard. In the first were cases in which the lesion did not cause reaction of degeneration and in which there was some return of function, however slight, within three weeks of the palsy commencing. In these cases it was evident that the nerve's function had been only temporarily suspended. Probably little help resulted from treatment in these cases, but gentle rubbing of the facial muscles and attempts to move the face somewhat helped restoration. When inflammatory disease persisted there was a somewhat longer delay in recovery. In the second group of cases reaction of degeneration was present three weeks from the commencement of the paralysis, and only the passage of time would show whether recovery was possible. No evidence of it was seen for at least three or four months, and by no known means could regeneration be hastened. Efforts should be devoted to preserving the nutrition and contractility of the muscles concerned, and to preventing disfiguring contractions. It was desirable to use a simple apparatus designed to prevent the mouth being drawn over to the opposite

side and the stretching of the muscles at the corner and upper border of the mouth. Muscular nutrition and contractility could be preserved by massage and by the make and break of the galvanic current. With the return of voluntary movement the best course was a re-education of the muscles in front of a mirror; other measures could now be suspended. Sometimes at this stage there ensued postparalytic contracture, with some permanent shortening of muscles, and a failure to control the facial expression properly occasionally with awkward results. It was difficult to say during what interval massage and galvanism was advisable in the hope that regeneration of the nerve would occur; but usually, if there was no response to faradism at the end of six months, further massage and electricity seemed useless. He had not yet had sufficient experience of anastomosis of the nerve to enable him to form a very definite opinion on it.

Discussion.

The PRESIDENT thought that the decision whether or not to carry out anastomosis could best be reached by considering the cause of the paralysis in the particular case. Recovery was likely when the cause of the trouble was that the nerve had been struck by a blunt instrument. But if during an operation the nerve was severed by a blow from the mallet or a sharp chisel it was difficult to know what would happen to it. In most of the cases he believed recovery would follow if it was left alone. Anastomosis was still in the experimental stage, and every effort should be made to perfect it; then, perhaps, dependable rules could be laid down. At present even the most successful operation of anastomosis did not restore complete emotional expression.

Mr. A. J. M. WRIGHT and Mr. SYDNEY SCOTT thought that six months was too short a time-limit for recovery, and Mr. Scott referred to a case of his own in which restoration took place after three years.

Sir WILLIAM MILLIGAN remarked on the comparative rarity of postoperative facial paralysis in this country, which he considered was a tribute to the care mostly exercised in these operations. Sometimes injury to the facial nerve was due to the subsequent dressing, perhaps to packing too tightly, or to the use of caustics. He considered that six months was too short a time-limit for recovery, and had seen a patient completely recover after two years of paralysis. He had never seen such complete recovery after anastomosis as that which nature could bring about unaided.

Mr. E. WATSON-WILLIAMS alluded to the prognostic significance of the time at which facial paralysis came on. If it was manifest at or immediately after the operation the paralysis was likely to be more serious than when two or three days elapsed between the operation and the beginning of the paralysis. He had especially noted the difference after labyrinthectomies, and for that reason hesitated before doing the operation. The profession owed a debt of gratitude to Sir Charles Ballance for his work on the anastomosis of nerves, and for pointing out what nerves could be spared. Mr. Watson-Williams had twice divided the glossopharyngeal nerve, and in neither case had the patient suffered any inconvenience. That particular nerve, strange to say, would take on a motor function.

Sir JAMES PURVES-STEWART said that he did not think that trauma in the middle ear, whether surgical, accidental, or suppurative, was amenable to anastomosis, because the trouble was in the Fallopian aqueduct. The cases in which operative intervention was justifiable were those in which the nerve was healthy down to the stylomastoid foramen. It was of no use to anastomose a sensory nerve to the distal end of the facial nerve. With regard to the selection of the nerve for anastomosis, the hypoglossal was more easy to identify and deal with than the glossopharyngeal, and the spinal accessory was easier still.

Mr. G. J. JENKINS referred to a case in which anastomosis of the descendens hypoglossi gave a fairly satisfactory result four years after facial paralysis began.

Sir JAMES DUNDAS-GRANT spoke of recovery of traumatic facial paralysis after digital massage, also after mild galvanic stimulation by the anodal pole of the battery.

Mr. M. E. VLASTO said that after the performance of anastomosis there was a loss of the former tone of the muscle. The comparative infrequency of traumatic facial paralysis in this country he attributed to the greater operative timidity of British in comparison with continental and American surgeons.

Mr. LIONEL COLLEDGE said that in the cases which were going to recover there was usually evidence of improvement within four months. Recovery was improbable after the lapse of six months, though it occasionally occurred. In doing anastomosis it was very important to use the whole nerve; end-to-side anastomosis was not likely to restore dissociated movement.

Dr. C. P. SYMONDS said that a possible explanation of some of these cases of long-delayed recovery was that there was a functional perpetuation of what had been an organic disability. If a patient were merely a passive agent and the doctor was content with massage and electricity there was a danger that when regeneration occurred he would not exploit it properly. Exercises before a mirror were very valuable.

Dr. SYMONDS then read a paper on

Diagnosis and Localisation of Cerebral Abscess,

confining his attention to abscess arising from suppuration in the ear and situated in the dural membrane. In the early stages of abscess formation, he said, usual symptoms were fever, rapid pulse, malaise, and anorexia; suppurative encephalitis and severe headache sometimes followed, with vomiting and drowsiness with the increased cranial pressure. Commonly the suppurative process became localised and an abscess cavity with tough walls was found. There was then no diffuse encephalitis. The headache was increased by stooping and coughing. Severe headache, vomiting, and drowsiness, with slowing of the pulse, showed that obstruction had occurred to the outflow from the ventricles, with internal hydrocephalus, and the result might be fatal. In the early stages it was usually necessary to rely for diagnosis on the signs of local damage caused by the abscess.

The localising signs of cerebral abscess could be considered under (1) cerebellar, (2) left temporal, (3) right temporal. In the first of these, suboccipital headache was important, but later it was usually bifrontal or general. Generally the abscess was deep in the lateral lobe, and then there was incoördination of movement in the limbs on the same side. The simplest method of examination was that by the nose-finger test, the examiner's finger being shifted each time, and the response of the patient being required quickly. Another valuable sign was nystagmus, there being a tendency for the eyes to swing away from the side on which the cerebellar lesion was situated. In abscess of the left temporal lobe (in a right-handed person) the valuable localising sign was aphasia. This sign might not be present when the abscess was far forward in the lobe, but it was an early sign when the abscess was in the middle or the posterior third. Though a patient suffered from definite aphasia, he might yet be able to converse without apparent difficulty. The appropriate method must be used to detect this. The patient should be asked to name quite a number of articles. There were only three signs of value of right-sided temporal abscess in a right-handed person. One was slight weakness on the opposite side of the face, shown on smiling, less evident when the patient is asked to show his teeth. The second group of signs were those of pressure on the

pyramidal tract—i.e., absent or diminished abdominal reflexes, increased tendon-jerks, and a plantar response which was either extensor or doubtful. The third sign, less constantly present, was of great value when found—namely, defect in the visual field owing to the optic radiation being involved. When abscess was suspected the visual fields should always be examined.

With cerebral abscess, went on Dr. Symonds, the cerebro-spinal fluid was clear and contained from 18 to 95 cells per c.mm., mostly lymphocytes. The chloride content was normal, and sugar-reducing bodies were present. A preponderance of polymorphonuclear cells in the fluid, with diminution of chlorides and absence of sugar-reduction, usually indicated meningitis, and leakage into the ventricular system or the subarachnoid space.

In the course of formation of an abscess there must be a presuppurative stage of inflammation, and he suggested that arrest could be produced at this stage without pus formation being reached.

Discussion.

The PRESIDENT said that in the books it was stated that nystagmus was not noted in 30 per cent. of cases of cerebral abscess. It was sometimes very difficult to detect, especially in a stuporose patient. If the attention of such a patient could be directed to the same side as the lesion the eyeball would be seen to return slowly to the mid-line. When there was a discharge from the ear in cases of encephalitis lethargica it was apt to be assumed that cerebral abscess was present, and operation might be performed.

Sir JAMES DUNDAS-GRANT spoke of the importance of being able to recognise superficial abscess.

Mr. F. W. WATKYN-THOMAS described a case of abscess over the right frontal sinus, which was drained. Following the operation definite aphasia developed, this being the only case in which he had seen aphasia in such a condition. The patient died and the course of the infection could not be traced. At autopsy a definite depression was found over the anterior portion of the Sylvian fissure, over the foot of the Rolandic area, and extending to the frontal. In none of the kind of cases under discussion did there seem to be evidence of "crossed-deafness," or of pure word-deafness.

Mr. SCOTT emphasised the importance of withdrawing only a minimal quantity of cerebro-spinal fluid in these cases. In one case a surgeon withdrew two test-tubes full of fluid, and unconsciousness and arrest of breathing followed. In regard to aphasia, he preferred the term "naming amnesia." The patient should be asked to name quite a number of objects. Leucocytosis in the blood was important in distinguishing non-suppurative cases of localising encephalitis.

Mr. LESLIE POWELL pointed out the importance in a very sick man of doing the mastoid operation first and waiting a day or two before opening the abscess.

Sir WILLIAM MILLIGAN emphasised the value of Dr. Symonds's comments on non-suppurative encephalitis, which might be due to circumscribed serous meningitis.

Mr. JENKINS spoke particularly on the cases having a big accumulation in the subarachnoid space, which were often diagnosed as abscess of brain tissue.

DR. SYMONDS replied.

SECTIONS OF OPHTHALMOLOGY AND NEUROLOGY.

A JOINT meeting of these Sections was held on Feb. 11th under the chairmanship of Mr. ERNEST CLARKE, President of the Section of Ophthalmology. A discussion on the value of

Recent Methods of Treatment in the Late Stages of Ocular Syphilis

was opened by Mr. J. H. FISHER, who commented on the swing of the pendulum noticeable in the drug treatment of syphilis during the last two or three years. It had, unfortunately, become common to order grey powder in tablet form, so that it was passed undissolved, and to give iodide of potassium in minute doses of 3 or 5 gr. when at least 30 gr. were required. A more intimate association between ophthalmologist, physician, neurologist, and surgeon was desirable; not a few cases of enlarged glands, arthritis and bone disorders, previously diagnosed as tuberculous, would have been revealed as syphilitic by ophthalmoscopic examination. The efficacy of Donovan's solution, such drugs as atoxyl and soamin, and Ehrlich's discovery of salvarsan and neosalvarsan had caused the pendulum to reach an extreme. The conclusion of those qualified to judge, however, had been that the older drugs were still essential for the cure of the disease, and that the Wassermann reaction could only be a useful adjunct to the other means of diagnosis. Modern methods and modern drugs varied within wide limits, and every syphilologist appeared to have laid down his own course of treatment. The increased readiness of patients to seek treatment, the facilities for obtaining it, and its more efficient administration must not be forgotten in estimating the value of modern methods. A true comparison could only be made when properly organised statistics of late manifestations and syphilitic nervous diseases had been compiled.

Among the late manifestations of syphilis in the eye were iritis, scleritis, disseminated choroiditis, interstitial keratitis, and ophthalmoplegia; also diffuse neuro-retinitis with dust-like opacities in the vitreous. This last seemed to be less common than when the speaker had begun his work, and the improvement might well be the result of the more thorough and systematic treatment of the disease in its primary stage. The new injection treatment had been of great value in secondary syphilitic iritis, since the antidote was brought directly to the vascular iris by the blood stream. For the same reason it should be more efficient in preventing the lodgment of the spirochæte in the vascular choroid. Interstitial keratitis from acquired syphilis arose from 5 to 20 years after the primary infection, and never attacked the other eye. The manifestation in the cornea was always (1) deep invasion of the corneal layers with ciliary injection at the base of a tongue-shaped area of advancing haze, and (2) extension to deep vessels. Inunction with mercury had always cleared up the trouble, and the use of the eye was preserved if treatment were started early. In interstitial keratitis from inherited syphilis, however, no kind of treatment arrested or modified the disorder. It had been observed that treatment was of more use in cases where dense vascularisation of the cornea had occurred; if this were so the reason would be that the drug, since introduced intravenously, passed directly to the site of the inflammation. The reason why anti-syphilitic methods were so powerless in keratitis of inherited syphilis might be that the whole tissues of the cornea were impregnated with the spirochæte or its products from the time of conception, whereas in the acquired form the condition was only the chance lodgment of a single focus.

Neurological Disorders.

He was sure that it was possible to delay the advance of optic atrophy in tabes by a thorough course of mercurial treatment, particularly where a well-maintained field had been present when the patient first came under treatment. It must be remembered that many tabetics showed temporary diplopias which certainly cleared up under the older forms of treatment, but ophthalmoplegia dependent upon nuclear degeneration might also be limited by the early circulation of the antidote in all parts of the basal nerve stem. In the same way vascular disorders might be prevented, including aneurysms and sclerotic changes. Gummatous meningitis had always been amenable to the energetic administration of mercury and potassium iodide.

Dr. J. PURDON MARTIN dealt with the neurological symptoms of late ocular syphilis, which followed the

same classification as syphilis of the central nervous system into the three divisions of (1) parenchymatous disease of the brain or spinal cord, (2) syphilis of the cerebral adventitia, and (3) the paracentral or tabetic type of neurosyphilis. Parenchymatous cerebral syphilis showed itself in the Argyll Robertson pupil and isolated pupillary palsies and irregularities. It resisted chemical methods, but often yielded to the new malarial treatment, in so far as the nerve elements were still capable of recovery. Many general paralytics treated in this way showed great ocular improvement. The commonest symptoms of adventitial syphilis were papillœdema and palsies due to increased intracranial pressure, which would clear up under early specific treatment. Delay, however, allowed the papillœdema and its exudate to increase, and the exudate to organise and become permanent, resulting in a greater atrophy of the nerve-fibres as the œdema subsided.

The nervous damage in tabetic or paracentral syphilis, he said, appeared in structures outside the central nervous system in close contact with the meninges and cerebro-spinal fluid, such as the posterior nerve roots and ganglia and the optic nerve. In oculomotor palsies the affected nerve was almost certainly involved in this way at the meningeal level. The results of treatment depended on its institution as early as possible, or at any rate before the nerve was completely paralysed. According to Stargardt, the nerve suffered from the infiltration of its sheath by minute gummata, the chief point of invasion being where the nerve passed through the dura. This infiltration generally yielded to iodides and mercury, and unless the nerve-fibres had been killed they would recover. Similarly, even if they had been completely interrupted and had started to degenerate, new fibres would grow down on relief of the infiltration and recovery take place in a few months. If, however, organised exudate permanently interrupted the path of the fibres, or the ocular muscles degenerated, recovery was impossible. The rule in orthopædics was that a muscle from which the nerve-supply had been temporarily cut off should be placed in a position of complete relaxation, as if it were stretched it degenerated quickly. Paralysed ocular muscles, however, were unfortunately in continuous tension, and tenotomy of the opposing muscles was contra-indicated for various reasons. Existing drugs were potent enough, and the need was for some way of freeing a passage for the new nerve-fibres and of maintaining the integrity of the paralysed muscle for some months. Optic atrophy resisted specific treatment because of the vulnerability and lack of recuperative power of the optic nerve. It was not often recognised early enough. If, however, it were taken in time, energetic chemical treatment could produce fair results. Novarsenobillon in doses of not more than 0·6 g. was the drug of election at present, and if more potent remedies were invented the results would be improved. Finally, Dr. Martin warned his hearers against the snare of the negative Wassermann.

The Value of Rest in Optic Atrophy.

Sir ARNOLD LAWSON said that his war experience of primary optic atrophy had brought his pessimism on that subject to a head. Cure was practically hopeless. Organic arsenic was in some cases absolutely harmful; for mercury he had nothing but contempt, and iodides in large doses had but a very limited use and were unsatisfactory. In primary optic atrophy the degeneration was not the secondary result of an active inflammation, which might itself be cured, so checking the degeneration; the cause was irremediable and we could only hope to arrest the progress of the condition. He would like to know the true value of the Wassermann reaction in clinical syphilis. Out of 109 men admitted to St. Dunstan's with primary optic atrophy 62 had had a positive Wassermann and 20 had been negative; 27 were so bad that treatment was impossible. Nearly all had been through military hospitals and had intensive treatment, but there was no trace of difference between those who had been treated and those who had not, unless the former were worse. All had gone the same way. He suggested that there might be a hope for these cases in skilful, scientifically-applied rest, both general and local, administered in sanatoriums on the lines followed in the treatment of tuberculosis.

Dr. A. FEILING spoke of his personal experience, as a neurologist, of affections of the optic nerve and ophthalmoplegias. The meningo-vascular types tended on the whole to occur earlier and to be more or less amenable to treatment; the primary or parenchymatous degenerative forms were late and very resistant to treatment. Occasionally an optic neuritis would occur without any other signs or symptoms in the nervous system, and the Wassermann reaction might be negative, but the cerebro-spinal fluid would show the characteristic changes. He quoted a case in which treatment had restored the function. Much more common was syphilitic optic atrophy. He thought that the isolated form, not associated with obvious signs of general paralysis of the insane or tabes, ran a more benign course. He had followed a number of cases for periods up to five years, and six of them at least had not progressed after treatment. There was a very sharp distinction between nuclear palsies and those associated with isolated muscles and due to syphilitic meningitis. In the former treatment was seldom any use; in the latter it would cure, at all events for the time being. Internal ophthalmoplegias were very common and occurred without other clinical evidence of syphilis. They could be regarded as syphilitic scars and might take all varieties of form. He had never seen the syphilitic Argyll Robertson pupil disappear as the result of treatment, though pupillary reactions might get brisker. The Argyll Robertson pupil of other conditions, such as encephalitis and chronic alcoholism, might disappear with treatment. He had never seen miosis alter at all. He agreed that the cerebro-spinal Wassermann should always be taken in ocular syphilis. The treatment he used was intravenous administration of novarsenobillon at weekly intervals, with a month's remission after six doses. He had seen one case where decided deterioration in vision occurred after tryparsamide, and many other cases had been reported, but he knew of no signs of visual defect following other kinds of arsenical administration.

The Syphilologist's Point of View.

Mr. S. H. BROWNING laid emphasis on the importance of treatment by a syphilologist. He had treated many hundreds of cases of interstitial keratitis with the new methods of treatment—salvarsan, neosalvarsan, and bismuth—though nearly always combined with mercury. He was convinced that they did better with intensive antisyphilitic treatment than without it, and some of his results had been almost dramatic. He referred to the work of Carwell and Derby [1] in Massachusetts. This work had definitely settled the question in favour of treatment. For tabes the treatment resolved itself into a judicious blend of the old and the new, and the individual patient must be considered. For the hospital case treatment must involve as little pain and incapacity as possible, or the patient would disappear when the symptoms disapppeared. For those who could afford it, however, the Aachen treatment—mercury inunction, baths, mineral waters, &c.—was undoubtedly the best, preferably at Aachen. He regarded self-inunction as futile. For the last few years he had replaced mercury by metallic bismuth with excellent results. The treatment of a tabetic involved far more than chemicals. The doctor should advise on small matters like clothes, which made all the difference between pain and rest for the patient. There was little to be said for the newer remedies in the ideal treatment of late syphilis, but they had their place if the treatment was to be a compromise with the patient's circumstances.

[1] THE LANCET, 1925, ii., 764.

General Discussion.

Colonel L. W. HARRISON said that if mortality were a guide to morbidity it seemed probable that congenital syphilis would become rarer. The statistics of the Registrar-General showed a marked drop between 1917 and 1924. He thought the treatment of interstitial keratitis in congenital cases well worth while, though disappointing. At Rochester Row good results had followed subconjunctival injections of salvarsanised serum. For gummatous manifestations he believed that potassium iodide was very valuable to clear up the mess after the spirochætal activity had been stopped by a spirochætocidal remedy. He was sure that the omission of mercury or bismuth from the treatment of early cases increased the incidence of ophthalmoplegias later. By far the majority of the cases were in patients who had been treated by arsenobenzol alone. He had compared the results at the St. Thomas's Hospital centre with those of the Johns Hopkins Clinic. At the former mercury and bismuth were combined with arsenobenzol, and there had been no case of cranial nerve palsy. At the latter they had used "606" alternately with courses of mercury inunction, and out of 2500 cases had had 58 neuro-recurrences, including cranial nerve palsies. Arsenobenzol gave good results when given subcutaneously or intramuscularly; in fact by these routes the tissues were given more time to form that derivative of the drug which was spirochætocidal. He pleaded for perseverance in treatment; 20 injections of both drugs should be given after the Wassermann reaction became negative.

Dr. N. PINES described his successful results in interstitial keratitis with the intravenous injection of sodium iodide in large doses. The cornea cleared up rapidly and the patients never showed signs of iodism.

Dr. GORDON HOLMES did not agree that the optic atrophy of general paralysis of the insane and tabes must necessarily lead to blindness; many cases preserved their vision for years, especially under treatment. The essential lesion was an interstitial syphilitic process associated with primary degeneration of a certain number of nerve-fibres—i.e., a cellular infiltration in the nerve, usually along the pia and especially marked about the region of the optic foramen. In this case the prognosis should not be so bad. In 1919 he had selected 20 cases and treated half of them with arsenic, or arsenic and mercury together, and half with mercury alone. The result had left no doubt that arsenic was relatively ineffective and that mercury in full physiological doses, up to mild salivation, was necessary to get results. He did not agree that self-inunction was useless. Bismuth was more useful in the ocular palsies, especially those of tabes. From the neurologist's point of view it was a pity that Ehrlich had ever discovered the arsenical preparations.

Mr. LINDSAY REA showed slides illustrating a number of conditions, including interstitial keratitis, exudate in the vitreous, papilloedema, and gumma at the side of the cornea, which had cleared up under N.A.B. He would not admit that nothing could be done; the case should be treated early with N.A.B. followed up by mercury and iodides. The Wassermann reaction must not dominate the treatment, and the Lange gold reaction must be taken. The constitutional condition of the patient must not be forgotten and treatment must be continued for years in small doses. Big doses did harm.

The PRESIDENT remarked on the importance of teaching the public that they must continue treatment.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH.

ON Feb. 1st Dr. JAMES ORR gave an address on the later views of Sir James Mackenzie on the

Nature of Cardiac Action,

with particular reference to the phenomena of heart-block. Mackenzie's work, he said, had been the subject of adverse criticism, mainly on the ground that it was purely speculative. Mackenzie was a speculative thinker, but the views he expressed latterly were based upon prolonged clinical observation. In view of this criticism it was important to examine his position critically in the light of modern experimental research. This position was distinctive in its conception of the Purkinje system of the heart—the nodes and bundle—as the regulating and controlling structure of the organ. The cardiac muscle only contracted in response to stimuli reaching it from this source, and conduction in the bundle was attained, not by the passage of an impulse along a conducting structure, as that term was generally understood, but by successive stimulation of contiguous cells in the bundle, each one discharging an individual impulse. For this reason Mackenzie described the nodes and bundle as the "genetic" system of the heart.

Recent experimental work, said Dr. ORR, had led to general agreement that the S.-A. (sino-auricular) node was normally responsible for initiating the cardiac contraction. As regards the spread of the excitation wave through the auricle, the balance of evidence, having regard to direction and spread and rate of transmission, was greatly in favour of a spread through the auricular muscle. A spread between the S.-A. and A.-V. (auriculo-ventricular) nodes by means of a distinctive path had not been demonstrated, though an experiment by Mines, showing the persistence of electrocardiographic deflections after the abolition of muscular contraction, was suggestive.

In the ventricle there was no doubt, Dr. ORR continued, that the spread of excitation was accomplished by means of the bundle and its ramifications. The question centred upon the means by which this spread was accomplished, whether by simple conduction or by cell stimulation. Experimental observation made it clear that the A.-V. node could not be regarded as a simple conductor, and that it acted as a centre for the discharge of impulses. The phenomena of the nodal extrasystole and of reversed heart-block demonstrated this conclusively. With regard to the bundle, question arose as to the source of the ventricular beats in complete auriculo-ventricular dissociation. That there was no set ventricular rate was shown by the fact that, in a single individual who was subject to complete heart-block, the ventricular rate varied at different times from 30 to 45 per minute. The electrocardiogram in conditions of complete heart-block showed that the excitation wave entered the ventricle supra-ventricularly. It presumably had its origin either in the A.-V. node or in the supra-ventricular part of the bundle, immediately peripheral to the lesion. This view was accepted by many experimental observers, and the trend of recent work seemed to be in the direction of regarding the whole Purkinje system as essentially a stimulus-producing structure. Mackenzie's conception of the Purkinje system as a genetic structure afforded a complete and consistent explanation of the phenomena observed experimentally and clinically. The only alternative was to regard it as a conducting mechanism which, in certain circumstances, acquired the capacity of producing stimuli.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting of this Institution held on Feb. 3rd Mr FRANK JEANS read a paper entitled

Some Problems of Urological Surgery.

Dealing with mobile kidney, he said that very few cases needed operation, and those that did, if diagnosed early by pyelography, needed division of the so-called aberrant renal artery and no nephropexy. Most of the real cures of symptoms by nephropexy could have been brought about by division of this artery, a much more physiological operation than the fixation of an organ which Providence had decided should be fairly mobile. He did not believe that mere mobility of a kidney—unless it was liable to obstruction—e.g.,

by an extra artery—produced symptoms attributable to the kidney and to hydronephrosis.

Speaking of renal tuberculosis, Mr. Jeans laid emphasis on its insidious onset, quoting cases in which it followed post-parturient pyelitis, gonorrhœa, and the persistence of a bullet in or near the kidney. In these cases the patients had owed their lives to the fact that their doctors had suspected tubercle in time to save them by nephrectomy. An impor ant cystoscopic sign diagnostic of early tuberculosis of one kidney was the rebound, at an acute angle, of the colouring fluid used as an indicator. This proved a thickening of the lower edge of the ureteric outlet, and was very valuable as being the earliest sign which could be detected. Early diagnosis by cystoscopy was very desirable; all his private patients who had had nephrectomy were well, but he had to think hard to recall hospital patients who were still alive, for they came for treatment when the condition was already bilateral.

In prostatectomy, said Mr. Jeans, he favoured the so-called blind operation, as against the long incision at sight with the patient in the Trendelenburg position. Men with high blood pressure did not stand the Trendelenburg position well, the operation took 20 minutes longer, and complications were therefore commoner.

Prof. JOHN HAY and Dr. WALLACE JONES submitted a paper on

Trauma Responsible for Auricular Fibrillation

from the medico-legal standpoint. The trend of their communication was to show that trauma or physical strain was sometimes the exciting factor in the production of auricular fibrillation. The disability might occur as the result of a man's employment, and in such cases the employers would be liable. They reported five cases, in one of which fibrillation was caused by a severe electric shock. A man sitting on an electric crane accidentally placed his forehead against the live terminals of the crane, receiving 250 volts of direct current; before the accident he had been perfectly healthy, but after it the auricles continued to fibrillate until the fibrillation was broken by quinidine. In the other four cases three of the patients were men in whom ordinary clinical examination had not revealed any cardiac disease or damage and who had not had any subjective manifestation of cardiac inadequacy before the onset of fibrillation. In all three fibrillation occurred as the result of sudden definite physical effort. In the fifth case the heart had not been sound; there had been evidence of slight aortic regurgitation, and the electrocardiogram had shown a right bundle lesion. Up to the time of the accident, however, this patient had carried on comfortably with his ordinary occupation. Then, when lifting a heavy weight on to a roof, he had suddenly "felt something give in his chest." Fibrillation had started at that time and had persisted, and the patient had been unable to resume his occupation. The medico-legal significance of these facts was of considerable practical importance.

ACTION AGAINST A DENTIST.—At Liverpool Assizes on Feb. 7th damages were claimed against a dental surgeon of Chorley for personal injuries alleged to have been caused to the plaintiff, a 13 year-old girl, when she was 8 years old, by his assistant. For the plaintiff it was stated that in May, 1922, the girl had some teeth taken out by the dentist's assistant so badly and roughly that her face swelled and she had to be treated daily for seven or eight weeks. Ultimately she was taken into Chorley Hospital, where a piece of decayed bone, which had loosened from the jaw, was removed. Later several operations were performed at Pendlebury Hospital at Manchester. The girl's face was now lop-sided, and she bore permanent scars from the operations. It was alleged that when the teeth were extracted the plaintiff's jaw splintered, that it became septic, and that this caused her to suffer from necrosis of the jaw. Dr. Rigby, of Chorley, stated that when he saw the girl four months after the extraction there was nothing to lead him to an opinion that the teeth had not been properly extracted. Evidence to somewhat similar effect was given by Mr. Gilbert Warburton, senior surgeon at Pendlebury Hospital. Mr. Justice Wright entered judgment for the defendant.

Reviews and Notices of Books.

SURGERY A HUNDRED YEARS AGO.

Extracts from the Diary of Dr. C. B. Tilanus, afterwards Professor of Surgery at the University of Amsterdam. Edited by Prof. H. T. DEELMAN, Professor of Pathology at the University of Groningen. Translated from the Dutch by JOSEPH BLES. London: Geoffrey Bles. Pp. 156. 6*s*.

THE origin of this diary was a tour made in 1818 by C. B. Tilanus and two friends, J. C. Broers and P. J. de Fremery, who had all three just taken their medical degree at the University of Utrecht and had decided to visit the various clinics in Belgium, France, and Germany before settling down. They must have employed their time well, for in after life we find them as professors at the Universities of Amsterdam, Leyden, and Utrecht respectively. A sketch of their careers is given in the introduction to this book by Dr. Delprat of Amsterdam. They first visited the hospital at Louvain, where Tilanus notes that, "they use here *acetus morphii* even up to 4 gram (60–62 grains) but they do not appear to have as yet obtained any satisfactory results from it. It .... was prescribed to-day in small doses in a case of persistent vomiting." It looks as though there were some error in either the diary itself, the transcription, or the translation, for if the maximum dose of morphia acetate—presuming that acetus does mean acetate—was really "even up to 4 gram" we do not wonder that the results were not satisfactory. From Louvain the three young doctors went to Paris, where for some six months they studied in the clinics of Dupuytren, Boyer, and Larrey, also noting the practice of other surgeons. The operations, although brilliantly performed, generally ended in death from sepsis. What strikes a modern observer even more than the dexterity of the surgeon is the heroic endurance of the patients. An account is given of the extirpation of most of the lower jaw concerning which Tilanus remarks, "the operation was difficult and took a considerable time"; the patient died on the nineteenth day after the operation. From Paris they went on to Germany, where in Heidelberg they met Chelius and Nagele, and at Cassel they were shown over the museum by Prof. Matsko, to whom they gave a tip of two thalers for his trouble, which, Tilanus remarks, "his Excellency did not refuse." At Halle, with which town the diary ends, they interviewed Sprengel and Meckel; the former told them that his chief interest was gardening. The diary is well worth reading as a simple but intelligent account of interesting people and events.

The medical profession owes a debt of gratitude to Mr. J. L. Tilanus for having placed his father's diary at the disposition of Prof. Deelman and to Prof. Deelman for having made an excellent little book out of the diary.

PHYSIOLOGY AND BIOCHEMISTRY IN MODERN MEDICINE.

Fifth edition. By J. J. R. MACLEOD, M.B., LL.D., D.Sc., F.R.S., Professor of Physiology in the University of Toronto, Canada; formerly Professor of Physiology in the Western Reserve University, Cleveland, Ohio. London: Henry Kimpton. 1926. Pp. 1054. 42*s*.

THE appearance of the fifth edition of this well-known text-book will be welcomed. The general character of the book remains unchanged, but some of the sections have been brought fully up to date. Thus the portion dealing with the physiology of the neuromuscular system has been expanded and rewritten by Dr. A. C. Redfield. A section on the physiology of the special senses has been added by Dr. J. M. D. Olmsted, and many new points have been included on the physiological and chemical aspects of blood, respiration, ductless glands, and the

metabolism of the carbohydrates. The section on respiration is one of the finest modern accounts of this system to be found in any students' text-book, and in this new edition practically all the recent work on the subject finds a place. The reader naturally turns soon to the section on insulin where he hopes to obtain some glimpses into the history of its discovery, which, as is universally known, was made in Prof. Macleod's own laboratories. Greater detail on the earlier experiments of Banting and Best would have been appreciated. The whole section summarising the work on insulin is well planned, but a fuller description of the chemical properties of the substance and of its distribution in the body would have added greatly to the value of the account. For instance, the fact that insulin can be recovered from the tissues of depancreatised dogs is merely mentioned and no reference at all is made to its presence in the tissues of patients dying of diabetes mellitus. The section dealing with the adrenal glands is rather disappointing. The historical review is somewhat sketchy; from it the student would gather that the earliest workers in this field were Takamine and Abel, and an account of the classical investigations of the older workers, such as Henle, Kruckenberg, and Holme, would have made the section more complete. Moreover, the absence of any description of the method of synthesis of adrenalin is to be regretted. In the section on the internal secretions of the ovary the important work of Herrmann and Fränkel and Allen and Doisy on the œstrus producing hormone prepared from the follicular fluid is ignored. C. R. Harington's observations on the constitution and synthesis of thyroxin may not have reached Toronto until after this work was in the press. In a future edition it might be better to replace the illustration on page 27 by one where the E.M.F. is measured by means of an ionisation potentiometer, such as is now on the market.

This volume has already proved to be of the greatest value in providing the student with a reliable account of the application of physiology and biochemistry to medicine, and the new edition is likely to be as popular as its predecessors.

DENTAL MATERIA MEDICA.

Modern Dental Materia Medica, Pharmacology and Therapeutics. Fifth edition. By J. P. BUCKLEY, Ph.G., D.D.S., F.A.C.D., Professor of Materia Medica, Pharmacology, and Therapeutics, Chicago College of Dental Surgery. London: William Heinemann (Medical Books), Ltd. 1926. Pp. 586. 30*s*.

THIS book is divided into two parts, a section dealing with materia medica and pharmacology, and a section on practical dental therapeutics. The first section follows the usual lines of general text-books on materia medica containing accounts of the different types of pharmaceutical preparations, mode of administration, dosage, and so forth. It appears to us that this section of the book might have been reduced without impairing its value, since it contains much that is of little moment to the dental student. On the other hand, certain drugs of importance in dentistry, notably adrenalin, might well have received fuller treatment. We find no mention either of the strength of the adrenalin which it is advisable to use in local analgesia or the symptoms resulting from an overdose, still less of the remedies appropriate to such a catastrophe. In the section on hæmostatics only the local application of the preparations derived from fibrin ferments and thromboplastic substances is described, though they are much more potent when injected. Oil of turpentine, a very old remedy of considerable efficacy, is not mentioned as a hæmostatic. The account of gum tragacanth omits its most important property in dentistry—namely, its power of increasing the retention of dentures when sprinkled on the surface applied to the palate. We might quote many other examples in which the treatment of drugs of especial use in dentistry appears to be too brief, while many sedatives and cathartics only occasionally used in dentistry are fully considered.

The second section on practical dental therapeutics comprises half the book and is the more interesting part, containing much valuable matter. We do not always agree with the author, but on the whole his account of the part played by various drugs in such conditions as pyorrhœa, pulpitis, and neuralgia is sound. He refers to two preparations of his own—of one of them the exact formula is not given. Some enthusiasm may be allowed to an inventor, but Prof. Buckley praises its efficacy in terms that might have been left to others. Those who allow for the author's prejudices, and skip the padding, will find in this book some useful accounts of the part played by drugs in the treatment of various dental conditions.

INTRODUCTION TO EXPERIMENTAL EMBRYOLOGY.

By G. R. DE BEER, Fellow of Merton and Jenkinson Memorial Lecturer, Oxford. Oxford: The Clarendon Press. 1926. Pp. 148. 7*s*. 6*d*.

WE welcome this book. Records of experiments, replete with a variety of turgid detail, are scattered throughout the extensive scientific literature of the world, and the bearings of any individual experiment or set of experiments on questions at issue are not always apparent except to those who are working in the same field. Others whose activities are affected in greater or less degree by the results obtained or suggested, frequently have not the time to follow out the ramifications of experiments, and will be grateful for the short accounts of results given in Dr. de Beer's little book. It excludes experimental work on the sexual glands and characteristics, and does not profess to give more than enough to throw a little light, in the words of the author, on the essentials of the problems of animal development. Connexion between the various subjects is well preserved.

Short chapters on regeneration and tissue culture are included, and a list of the numerous papers and books utilised completes a useful little work.

TELEOLOGY.

Man not a Machine. By EUGENIO RIGNANO. With a preface by HANS DRIESCH. London: Kegan Paul, Trench, Trübner and Co. 1926. Pp. 77. 2*s*. 6*d*.

Prof. Henry Fairfield Osborn says in a recent book, "If I have made a single contribution to biology which I feel confident is permanent, it is the profession that living Nature is purposive." There was a time when a man might have been burnt at the Darwinian stake for less; all that has happened to Prof. Osborn has been to be made a foreign member of the Royal Society. And it is significant that almost all the serious attempts which are made nowadays to explain life and evolution come to similar conclusions. Allowing that heretics are always likely to be more vocal than the orthodox, it is surprising how few books are written to support Jacques Loeb in his view that life is a chemico-physical system, though there are, of course, a great number of papers in biological periodicals which make that implicit assumption. The present slender volume by the editor of "Scientia," where a symposium on vitalism and mechanism has smouldered for a long time, makes no pretence to be a formal treatise; it is more like a manual of devotion containing a brief statement of the faith that the fundamental characteristic common to all vital phenomena is that they present a purposive, teleological, or finalistic aspect. It will strengthen those who think like the author, and will give them much food for thought and some fresh points of view. We would commend it especially to pathologists, who live in a peculiarly illustrative atmosphere, which indeed, Prof. Rignano realises, though when he notices the specificity of antitoxins (p. 38) he makes a bad mistake in his facts.

PRACTICAL PHYSICS.

By T. G. BEDFORD, M.A., F.Inst.P., Demonstrator of Experimental Physics in the Cavendish Laboratory, Cambridge, and Secretary of the Oxford and Cambridge Schools Examination Board. London: Longmans, Green and Co., Ltd. 1926. Pp. 425. 10*s.* 6*d.*

THE scope of the intermediate teaching in Practical Physics at Cambridge can be inferred from this book. A good selection of experiments has been made, and they are described in a way which should make it possible for the student to go through his practical course with a minimum of personal attention from his teacher, though the author rightly holds that for the proper teaching of physics the supervision of a keen demonstrator is essential. The ground covered is wide; in fact, were the student to go no further in the practical side of the subject he would still have a very fair all-round acquaintance with fundamentals, with the exception of subjects such as spectroscopy and radioactivity. Within the range of the subjects covered we have nothing but praise for the adequate way in which the different sections are treated and the difficulties explained.

HYGIEIA OR DISEASE AND EVOLUTION.

By BURTON PETER THOM, M.D. New York: E. P. Dutton and Co. 1926. Pp. 107. 2*s.* 6*d.*

THE influence of disease, and especially parasitic disease, on evolution is a topic well worth serious discussion in the light of modern knowledge. Dr. Thom's treatment is hardly worthy of the subject. It is vague, diffuse, and scarcely correct in detail. We find, for instance, on one page (p. 80) the statements that the "dread shadow [of puerperal sepsis] that once threatened every pregnant woman has passed for ever"; that tuberculosis "has undoubtedly destroyed more lives than all other infectious diseases together"; that "all those who succumb to 'tuberculosis' are inherently of a type that are deficient in resistance." On p. 98 we read of "antityphoid serum—to prevent typhoid fever." He visualises (p. 90) the time when progressive resistance will culminate in an absolute immunity of man to infections, forgetting that evolution and adaptation can occur in parasites as well as in hosts, and generally a good deal quicker in the former than in the latter. However, it is to the good that the author is a cheery optimist with a sound belief in man's capacity to get round any difficulties which he meets.

SELF-CARE FOR THE DIABETIC.

For the Use of Diabetic Patients. By J. J. CONYBEARE, *M.C.*, M.D., F.R.C.P. Lond., Assistant Physician to Guy's Hospital. London: Humphrey Milford, Oxford University Press. 1926. Pp. 70. 3*s.* 6*d.*

IT is only within recent years that it has been realised that if a patient suffering from diabetes mellitus is to do well he must know as much as possible about the disease and of the principles which govern the dietetic treatment. The recent books on the subject have been for the most part too technical for the average patient, and even the simplest of them has frightened and depressed more than one patient by references to diabetic coma and to cataract. These pitfalls have been avoided by Dr. Conybeare, who has written an excellent little book. The chapters on the disease and on the principles of the diet are written in a simple manner and should be easily understood by the patient. It would be an advantage if, in future editions, a graph was included of a blood-sugar curve after insulin as this would help the patient to understand its action more readily. Some of the details given are hardly suitable for poor patients. Thus absolute alcohol instead of methylated spirit is recommended for sterilising the insulin syringe and needles in order to avoid rusting, while the cheap alternative either of employing rustless needles or the addition of lysol to the methylated spirit used for sterilising steel needles are not mentioned. Undue emphasis is laid on one special preparation of diabetic foods in the text and the list of such foods in the appendix might be extended to include the diabetic foods which contain a good deal of carbohydrate.

The book should serve a useful purpose and should relieve the medical attendant of some elementary questions; on the other hand, if the patient is intelligent it may also provoke further questions perhaps more difficult to answer.

JOURNALS.

PROCEEDINGS OF THE OPTICAL CONVENTION, 1926.—The Third Optical Convention met in London in April, 1926. The previous conventions were held in 1905 and 1912, and the second and third meetings were thus separated by the war period in which the British optical industry made great advances. The Proceedings form a valuable record of improvements in theory and technique. The papers deal with every side of optical science and several are, of course, concerned with the eye, its mechanism and its defects. A paper on some visual factors affecting the use of optical instruments deals with such matters as the acuity of vision and its relationship to the structure of the eye, threshold values, and the effect of illumination on vision and the optimum size of field for use in observational instruments.—Two papers by Owen Aves and W. Swann treat of the refractive defects of the eye from the statistical point of view. In both papers the necessity of a greater uniformity in the conditions under which the tests are made and in the method of recording data is emphasised.—The Mechanism of Accommodation is the title of a paper by E. F. Fincham, in which the anatomy of the parts concerned is treated in detail and measurement of curvatures made by the author are recorded. Individual differences were marked.—A short paper by Margaret Dobson deals with Heterophoria and the charting of this defect by Esdaile's myophoriagraph. The problem of the anisometrope is discussed at some length from the optician's point of view by W. B. Barker.—Conrad Beck contributes an interesting paper on Recent Advances in the Manufacture and Use of the Microscope. The proceedings are published at £3 and consist of two volumes containing about 1000 pages. They may be had from the Secretary of the Optical Convention, 1, Lowther-gardens, Exhibition-road, London, S.W. 7.

Reports and Analytical Records.

COW AND GATE MILK FOOD.

ENGLISH FULL CREAM FOR INFANTS AND INVALIDS.

(WEST SURREY CENTRAL DAIRY CO., LTD., GUILDFORD, SURREY.)

THIS substance is stated on the label to be "a dried full cream milk, and to contain the equivalent of two pints of milk." The contents of the tin weighed 153 g. (5·4 oz.) and on analysis showed the following composition:—

Moisture	2·84	per cent.
Ash	6·16	,,
Fat	25·75	,,
Protein	26·43	,,
Lactose hydrate	38·02	,,
	99·20	,,

This milk, which is of the "drum-dried" variety, is a good specimen of pure unadulterated full cream milk, containing no added cane sugar, milk sugar, or preservatives. The fat is well up to the normal and the moisture somewhat lower. The claim that the tin contains the equivalent of two pints of milk is fully substantiated by the analysis. It mixes well with warm water, and is quite free from all rancid or greasy flavour.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 19, 1927.

HUNTER AND LISTER.

Sir BERKELEY MOYNIHAN'S public career as President of the Royal College of Surgeons of England may be said to have been inaugurated when he delivered the Hunterian Oration on Monday last; and the date being the 199th anniversary of HUNTER'S birth, falling in the centenary anniversary of the birth of LISTER, a comparison of the ideals and performances of these two outstanding figures made a splendid subject for a Hunterian Oration, and one to which the PRESIDENT did eloquent justice. HUNTER and LISTER are international surgeons who worked world revolutions, the first by establishing the foundation of medical practice to be the study of physiology, and the second by revealing, with the assistance of an infinitely larger range of material equipment and recorded knowledge, the principles of asepsis that dictate the whole of medical procedure to-day, alike for the prevention, alleviation, and cure of disease. In a fascinating address the PRESIDENT was able to show the existence of a parallelism between the two men which is remarkable, even though it may be largely due to the acute and reverential appreciation of LISTER for the magnificent conceptions and fundamental performances of his fore-runner.

The Hunterian Orator, in estimating the measure of the debt of the world to LISTER and HUNTER, compared the ideals of medicine, as established in the minds of the leaders of to-day, to those of enlightened soldiers for the cessation of war. He enumerated the triumphs of operative surgery made possible by LISTER, and longed for and sometimes foreshadowed by HUNTER, thus introducing the apparent paradox that the direct developments of HUNTER'S researches and of LISTER'S fruitful leadership have been a vast multiplication in the range of operative surgery, which may appear to be rather an increase of war. But those who are able to take a large view of the situation can see that the real objective is the ending of war. For what is the war, as conducted by medicine, directed against? Against the pain, the disease, and the death of the human race. Thousands of operations are performed to-day which could never have been attempted save for the wide wisdom and the intensive powers of research possessed by the two great leaders; but while those operations existed only in the imagination of HUNTER and his school the victims descended to death through the valley of pain and disease—quickly or slowly they descended, without hope of escape and little hope of respite. The war that is being conducted by modern medicine even though, in the operating theatre, it bears the closest resemblances to military performances, is a war that aims at and frequently succeeds in bringing peace. Further, it is an extraordinarily hopeful form of war in that the old methods are ever ready to change and to submit to new discipline, as the range of knowledge is increased and collated when gathered from such resourceful allies as chemistry, physics, and physiology, with its biological implications. The living progress of medicine is the glory of HUNTER and LISTER. They are not to be praised as the inventors of any particular manœuvre or the discoverers of any valuable technique, but as the men who opened up to medicine a vista of victories, while providing opportunity for the wisdom of the world to play a part in its own salvation. In the address delivered by Prof. J. M. T. FINNEY before the Hunterian Society we have eloquent testimony to the way in which HUNTER'S teaching permeated the culture of early America; the doctrines of LISTER exercised a similar force throughout the world.

The debt of humanity is equally divided between HUNTER the great philosopher and LISTER the great performer, a differentiation which is not meant to suggest that the leader in the eighteenth century was other than a remarkable technician, or that the leader in the nineteenth century was not a profoundly deep thinker. As a matter of fact, which is well brought out in the latest Hunterian Oration, the methods of approach to the great problems of disease, as they unrolled themselves before the two men, appear wonderfully similar, and Sir BERKELEY MOYNIHAN indicates a suggestive similarity in their lives. Each underwent a long and arduous apprenticeship—HUNTER in the private medical school of his elder brother, and LISTER in the wards and lecture rooms of Edinburgh and Glasgow. Each, with much that was identical in their labours, strove to found boundless theories on a basis of exact knowledge, firmly laid and truly tested. In the case of HUNTER the immediate aim was mainly to acquire a knowledge of structure in relation to biological processes, while in the case of LISTER comprehension of the processes of inflammation in relation to the manifestations of disease formed the first main objective of study. And when the large results of their researches begin to appear each is in young middle age, but with a life-time's record accounted for. HUNTER was 34 when he had placed to his credit by individual research the solution of biological problems whose existence had hardly been realised, and LISTER was 33 years of age when he arrived in Glasgow, with results that can never be exaggerated, having behind him such a mass of researches made during the past seven years as, said the Hunterian Orator, would almost suggest that he was seeking to fit himself to be an experimental physiologist or pathologist rather than a surgeon. The intensive nature of their early training led up to their magnificent achievements, while their devotion to the highest ideals of science secured for them the enthusiastic adherence of their followers.

TESTS OF HEPATIC FUNCTION.

THE enormous importance of the liver in the internal economy of the body has led to perpetual research during centuries, and the strange but definite fact that there is no clear-cut clinical syndrome which can be directly attributed to its dysfunction, as uræmia or steatorrhœa and glycosuria can be attributed to renal or pancreatic deficiencies, has in no way diminished our interest in this organ. For however elusive the signs and symptoms of hepatic deficiency may be, it has long been clearly recognised that gross destruction of liver tissue by progressive disease, or a generalised poisoning of the hepatic cells, make the prognosis very grave, especially in cases where operative treatment or the administration of such toxic drugs as chloroform or novarsenobenzol is contemplated.

Interest in the liver has been further stimulated by the more exact classification of cases of jaundice which are now very generally recognised as falling into three classes: (1) those in which there is gross mechanical obstruction to the biliary channels; (2) those in which the livér cells themselves are so disordered that the proper excretion of bilirubin from the blood cannot be accomplished; and (3) those in which the jaundice is the consequence of excessive hæmolysis, the blood being saturated with bilirubin of extrahepatic origin. Intent on the elucidation of such problems, laboratory workers have long sought for chemical tests which may demonstrate pathological changes in the liver cells, and hence any defect in the general physiological capacity of the liver. Such tests have been suggested in great numbers, and it must be recorded that they have usually had but a transitory popularity. Almost as fast as they are devised they fall into disuse, and it should be placed to the high credit of medical research that improved and novel tests are investigated perpetually by energetic workers who refuse to allow disappointment to convert them to pessimism.

In our present issue we print the results of investigations into two liver tests which, if not entirely novel, have not perhaps received the attention in this country which they appear to deserve. Essentially there is no great difference between the two, for in each a simple sugar is administered by mouth and the test consists in ascertaining the change, if any, which occurs in the concentration of sugar in the blood at subsequent half-hourly intervals. In the test described by Dr. D. T. DAVIES galactose is employed. This is given in a dose of 40 g. dissolved in 400 c.cm. of water, samples of venous blood being collected at half-hourly intervals for several hours afterwards. In addition to these blood samples, the urine is also collected, though the conclusion of BAUER, one of the German observers, that galactosuria was the one positive sign of abnormal liver function, is not fully borne out by the latest investigations. The blood-sugar curve has, in Dr. DAVIES'S hands, proved more useful, no great rise in this curve being observed save in those cases where the hepatic cells had been grossly damaged. Thus normal persons, patients with gross obstructive jaundice, and subjects with pernicious anæmia and acholuric jaundice, alike showed little or no rise in the blood-sugar after the ingestion of galactose; whilst those with catarrhal or toxic jaundice, cases of malignant disease with secondary deposits in the liver, and cases of cirrhosis following syphilis or chronic alcoholism gave very definite increases in the blood-sugar after galactose owing to the serious derangement of the glycogenic function of the liver. Mr. GORDON KING has employed lævulose, of which sugar he gives 45 g. in 100 c.cm. of water to the fasting patient. Subsequent blood analyses again were used to determine the curve of blood-sugar. In 53 cases investigated it was found that only those subjects in whom gross damage to the liver cells was present showed a marked and continued rise in the concentration of sugar in the blood. It is clearly too soon to discuss the ultimate value of these tests, though any attempt to give a firmer outline to the vague country of "liver disorders" is to be commended. The transitory nature of our confidence in the virtue of certain other tests has already been alluded to, and is exemplified in the interesting article by Dr. ERNEST BULMER who, in the current number of the *Quarterly Journal of Medicine*, records the unsatisfactory results which he has obtained during his investigation of the bromsulphalein test. In this test, devised by ROSENTHAL, a dye, bromsulphalein, is injected into a vein, and the amount of such dye remaining in the blood-serum half an hour later is estimated by a relatively simple colorimetric test. Earlier investigations appeared to promise that only in cases of defective liver function would there be marked retention of the dye, and indeed that the degree of retention would give an accurate indication of the extent of hepatic deficiency. From Dr. BULMER'S results it would appear that such hopes were groundless, and that there is too gross a margin of error to leave much practical utility in the test. Somewhat similar disappointment has been experienced in the case of the test associated with the name of Prof. H. van den BERGH. The hope that this test would supply a ready method of differentiating the various types of jaundice has not been fulfilled, though, as Dr. DAVIES points out in his article to-day, it has proved of value in estimating the degree of bilirubinæmia.

The critical clinician, when reading through the protocols of inquiries such as those to which we here allude, is apt to point out how little they add to the information which is already obtainable by careful clinical examination. The degree of jaundice can be as delicately estimated by the human eyes as by almost any laboratory test; the size of the liver and its consistency give information as precious as any that the biochemist can bring forward; and it is indeed to the clinician that the laboratory worker turns when seeking the interpretation of the subtleties before him. But to recognise these facts is not to disparage the chemists' efforts, for most important results have already been obtained of which the more precise classification of jaundice is an example; and if the laboratory now settles the diagnosis in but one case in a hundred, that one is to the good and is the probable forerunner of further diagnostic success.

THE LIMITATION OF EXPERT EVIDENCE.

IN the course of a case which has occupied his judicial attention for several weeks, Mr. Justice TOMLIN has ruled that he will not hear more than two expert witnesses on either side. The decision, discussed by a legal correspondent upon another page, has interest for the medical profession which furnishes so great a proportion of the expert evidence given in courts of law. It may cause some apprehension too. The medical practitioner may find himself involved from time to time in litigation in which professional negligence or malpraxis is alleged; will he not be prejudiced if the court curtails his right to summon all the expert witnesses he may consider necessary? Even in a civil action, still more in criminal proceedings, any such curtailment might amount to a denial of justice. We can only assume that no general interference of this nature is intended; indeed the circumstances in which the learned judge delivered his ruling appear to have been exceptional. A colliery company had asked the Court of Chancery to restrain the Swansea Corporation from filling a certain reservoir with water on the ground that, if the corporation carried out its purpose, the mine workings would be flooded. The case had occupied 26 days when Mr. Justice TOMLIN made his pronouncement; it has since lasted a further fortnight, as no doubt he foresaw, and it is not yet ended. He has adjourned the action for a month in the hope of making progress with the other cases in his list which were promising to be indefinitely postponed. Already expenses have been heavy; the existing costs are estimated at £40,000. One expert witness, called on

behalf of the colliery company, has been 11 days in the witness-box, and his evidence, it seems, is even now not yet concluded. In these circumstances it is not surprising that the judge does not desire to hear several additional experts whose evidence will travel over the same ground; if he is to limit the witnesses for the plaintiffs, he must also limit those for the defendants.

How far is it likely that the judge's ruling would be applied to litigation in which a medical practitioner is personally concerned as plaintiff or defendant? Here two points may be borne in mind. In the first place a Chancery judge sits without a jury. Partnership disputes between doctors, in which professional conduct might be an issue, might conceivably find their way into a Court of Chancery; but the normal case in which negligence or malpraxis is alleged will usually be tried before a jury. When there is a jury, it is for the jury—not the judge—to decide the facts. If so, the jury—not the judge—is entitled to say when sufficient evidence has been heard upon a particular point. The attitude of a juryman is sometimes unfathomable. He may discount the evidence of all the experts impartially, or he may reckon its weight by the relative numbers of the experts rather than by their relative qualifications; he may even think, if the case is tried in the country, that his own local doctor is a better man to follow than some stranger from London. But he is not to be told that he must only hear two experts and not three, or three and not four. In the second place, it must be remembered that one or two experts cannot always cover the whole of the ground or deal with every technical aspect. The Swansea Corporation, protesting against the ruling under discussion, urged that it might wish to call the evidence of experts in the separate subjects of mining, water supply, and geology. The judge answered that he would not limit the number of witnesses if satisfied that "by reason of special circumstances" justice could not be done without hearing other experts; and, in any case, additional witnesses could be called, even though experts, to speak to matters which they had personally seen. The argument of the Swansea Corporation would often apply where a case turns upon medical evidence. Recently, for instance, where a doctor was charged with performing an illegal operation, it was indispensable for the defence to adduce the evidence of expert pathologists, gynæcologists, and anæsthetists. It would have been intolerable if the defendant had been restricted to a maximum of two experts.

There are practical limitations upon the number of witnesses already. Learned counsel, who advise preliminarily what evidence is desirable and who are responsible subsequently for the calling of the evidence, know better than to weary with vain repetitions a tribunal which has already appreciated a point of fact or opinion. The expert upon whose authority the litigant most confidently relies is generally the first to be placed in the witness-box; when his evidence is ended, a sequence of lesser experts will add but little. The taxing-master, too, contributes to the limitation of numbers, since it is known that he may disallow the costs of superfluous evidence. But there are times when the risk of repetition must be run and when costs must be incurred without regard to their recovery. The defence of his professional reputation is a cause in which a practitioner must employ every resource. We cannot believe that judges will ever obstruct his right to call into the witness-box every witness who may be deemed necessary for that purpose.

Annotations.

"Ne quid nimis."

TREATMENT OF STOKES-ADAMS ATTACKS.

FEW clinical incidents are so dramatic as a Stokes-Adams seizure. The suddenness of the onset, the urgency of the symptoms, and the possibility of a fatal termination together create on the observer an impression never likely to be forgotten. The unexpectedness of the calamity is not infrequently intensified by the fact that before the first seizure the patient has had little cause to suspect the existence of any serious derangement of his circulatory mechanism, and may in fact have led an active life. Even physical examination between attacks sometimes reveals but little evidence of morbid changes in the heart; for though in most cases some grade of heart-block is present, instances do occur when even this is lacking. The mental anguish of these patients is often pitiful, and when their seizures follow one another in rapid succession they live in constant dread of impending death, hardly daring to move a muscle for fear of precipitating the next, and possibly the last attack. As in all paroxysmal conditions treatment resolves itself into abortive and preventive measures. The latter are the more important, for in the great majority of cases individual attacks are of short duration. Ventricular asystole implies not only that the normal impulses from the auricle are failing to reach the ventricle, but also that the lower centres in the heart have not set up an independent rhythm. It is not surprising therefore that Stokes-Adams seizures should most frequently occur during the unstable phase when partial heart-block is tending to become complete, or when complete block is reverting to normal rhythm. The increased incidence of attacks during such transition periods is well illustrated by a case recorded by Parkinson and Bain in our columns [1] in 1924. Failure of the auricular impulse to reach the ventricles may sometimes be due, in part at least, to an increase in vagal tone. Under these circumstances atropine may relieve the condition, but in the treatment of the Stokes-Adams syndrome the therapeutic effect of this drug is as a rule disappointing. When, on the other hand, the block is due not to vagal influence but to some structural lesion of the bundle or to damage caused by some toxic agent, the rational line of treatment is to endeavour to increase the excitability of the muscle of the ventricle itself. This may sometimes be achieved by subcutaneous injections of adrenalin (5 to 10 minims of the 1 in 1000 solution). Complete heart-block is sometimes abolished by adrenalin, whilst in other cases, although the block remains unaltered, ventricular standstill is prevented. S. A. Levine [2] has recently reported a remarkable case in which on two occasions Stokes-Adams attacks lasted for several minutes, and ventricular activity was re-established by injecting adrenalin directly into the heart. The most recent therapeutic agent employed in this condition is barium chloride, a drug known to increase the excitability of the ventricle under experimental conditions in animals, and A. E. Cohn and Levine have shown that clinically it sometimes appears to prevent recurrence of the syncopal attacks, and recommend a dose of 30 mg. four times a day by mouth. Unfortunately neither adrenalin nor barium appears to be efficacious in all cases, though in the present state of our knowledge they offer the best prospect of preventing the attacks.

INTELLIGENCE OF THE NEGRO.

THE problem of the negro is a hardy perennial in the United States, and it was inevitable in a country where so much work has been done with intelligence tests that their aid should be invoked in order to determine whether his assumed racial inferiority is

[1] THE LANCET, 1924, ii., 311.
[2] Boston Med. and Surg. Jour., 1926, excv., 1147.

real, and, if so, of what degree. The most recent of such inquiries to come to our notice is a survey of the children in the negro public schools of Atlanta. Miss Virginia T. Graham, psychologist to the U.S. Health Service, describes the methods and results, and was presumably responsible for the work. Over 3000 children in five schools were the subject of experiment. They were first of all tested by the Otis group intelligence scale, and those who made low or doubtful scores were then given individual tests; for this purpose the Stanford-Binet scale was principally relied upon, but was supplemented by three practical tests, the well-known Healy construction A, and two others less known here, the Kohs block design test and the Lincoln hollow square. The results of the group tests were compared with Otis's own norms for white children of 200 cities. All such comparisons are, of course, subject to the criticism that the two races have not an identical social and educational environment. Making all allowances, however, the results show that on the tests given the negro children, at all ages above the lowest, made averages lower than those of white children, and that the discrepancy at each age rises with the age; they also show that greater variability of performance is found among the whites than the negro, the negro group tending to hang more closely round the average, thus giving smaller possibility of superior capacity in individuals. Judged qualitatively on the basis of the tests, the negroes exhibited a lack of sensory discrimination and an inability to criticise their own work and recognise failure in it. In practical and rote work they showed more efficiency. These results are in accord with those of previous investigators in this line of work, but with regard to the degree of discrepancy of the races there is still much disagreement. The writer of the report makes no greater claim for the value of the results obtained than they will bear; she claims no infallibility for the tests, and she allows for the "distorting influence" of "attitudes and interests." It may be, however, that so far as the social and economic adequacy of the negro relative to the white is concerned, temperamental differences between the races are of more importance than the differences of intelligence which the tests are supposed to reveal. Until tests are measures of the complete man and not merely of an undefined "intelligence," inferences and predictions of individual or racial adequacy must be made with caution.

PATHS OF RENAL INFECTION.

THE mechanism of ascending infections of the kidneys has long been a subject of dispute. There are three paths along which organisms from an infected bladder may pass to the kidney—by the blood stream, by the lymphatics surrounding the ureter, and by the urine. Much experimental work has been done to decide which of these paths is the one taken by organisms in ascending infections of the kidney. In the December number of the *British Journal of Experimental Pathology* are published the results of the experiments carried out by C. H. Kellaway, C. J. L. Brown, and F. Eleanor Williams. Their method of investigation was to introduce various organisms into the bladders of guinea-pigs after producing a partial obstruction of the urethra and tying the right ureter. It was found that the usual result of this inoculation of the bladder was to produce an infection of the pelvis of the left kidney. Similar results have, of course, been obtained in the past by other experimenters, and taken alone these experiments do not furnish information as to the path taken by the infecting organisms. But whereas previous experimenters have regarded sterile blood cultures made at the autopsy as a proof that the infection could not have occurred via the blood stream, Kellaway, Brown, and Williams show that such an assumption is unjustifiable. In certain of their animals organisms could be grown from the blood during life although the blood cultures made at the autopsy proved negative, proving that blood cultures in the dead animal could not be relied upon to detect bacteriæmia during life.

In another series of animals experiments made by Kenneth Walker, F. H. Teale, and Dennis Embleton on the ascent of organisms via the chain of lymphatics surrounding the ureter was repeated. The above-named investigators had found that, if a loopful of *Bacillus prodigiosus* was placed in the urethra of a guinea-pig, and the animal was killed 6 to 12 hours later, the same organisms could be recovered from the capsule of the kidneys, although the blood and the urine of the animal were sterile. Kellaway, Brown, and Williams failed to obtain similar results except in one single instance. They are not, therefore, inclined to support the view that infection via the lymphatic chain surrounding the ureter is of common occurrence. But although their experiments showed that the possibility of the renal infection being blood-borne could not be put out of court by the fact that blood cultures made at the autopsy were sterile, they are not inclined to think that organisms travelled in the blood stream. A blood-borne infection would not explain the fact that in the majority of their animals it was the left untied kidney that became infected, the right kidney, whose ureter had been ligatured, remaining free. The mere tying of the ureter had apparently no effect in determining the side on which a blood-borne infection developed. In four out of five experiments in which organisms were injected into the blood stream 24 hours after ligature of the right ureter the kidney on the tied side became infected. If, however, two, three, or four days were allowed to elapse between the tying of the ureter and the injection into the blood stream of organisms no infection of the hydronephrotic kidney occurred.

In the hope of obtaining more information as to the path taken by infecting organisms, another series of experiments were made with suspension of insoluble particles introduced into the bladder. In five experiments in which the urethra was partially obstructed and a suspension of carmine introduced into the bladder, particles of carmine were invariably present in the pelvis of one or both kidneys after from two to three and a half hours. When the sacral nerve roots were destroyed, so as to produce paresis of the bladder, the ascent of pigment was not so regular, but occurred in four out of eight animals killed two to four hours after injection. In these experiments particles were invariably found within the lumen of the ureter and pelvis and never in the wall of the ureter or in the accompanying lymphatics. These experiments, together with others carried out on cats and rabbits, prove that when the urethra is partially obstructed or the nervous mechanism of micturition disorganised by division of the sacral nerve roots, the introduction of pathogenic organisms of pigment granules into the bladder is followed within two to three hours by their ascent into the pelvis of the kidney. In the opinion of the authors this ascent occurred too rapidly to be accounted for by a blood infection although, as previously stated, the fact that the blood cultures at the time of the autopsy were sterile could not be taken as definite proof that a bacteriæmia had not been present during life.

Since they had failed to confirm the findings of Walker, Teale, and Embleton on the subject of an ascending spread via the lymphatics, they were led to the conclusion that the organisms and particles ascended along the lumen of the ureter. These results are similar to those obtained in 1890 by J. C. F. Guyon and J. Albarran when working with dogs and rabbits in whom a complete retention had been produced. They are also supported by the work of G. E. Brewer in 1911, who produced pyonephrosis by injecting organisms into the bladders of dogs with artificial retention. The experiments of Kellaway and his colleagues, however, differ from those mentioned above in that the bladder injections were made in the presence of a partial urethral obstruction

[1] Public Health Reports of the United States Public Health Service, vol. xli., No. 49, Dec. 3rd, 1926.

and not a complete one. It must be remembered also that Walker, Teale, and Embleton worked with animals with an intact bladder and urethra, and that their contention that the mechanism of spread was by the lymphatics only applied to cases of ascending infection unassociated with obstruction. When obstruction is present in the lower urinary passages it is more likely that the infecting organisms ascend along the column of stagnant urine lying in the ureter.

SANITATION OF THE PORT OF LONDON.

Dr. W. M. Willoughby, in his report for 1925 to the Port of London Sanitary Authority recently published, mentions that no case of plague, cholera, or typhus fever had to be dealt with, and that no plague-infected rat was found in the port. All vessels from abroad are visited by a medical officer; ships from "infected" or suspected ports are boarded and examined on arrival, and later, in dock, come under further scrutiny by a sanitary inspector. Ten deaths were notified, seven from pulmonary tuberculosis, and one each from small-pox, enteric fever, and measles. Three ships reported they had had a case of suspected plague on board during their voyage, but it is doubtful if any of these was really plague. Twenty-one ships reported outbreaks of small-pox since leaving their port of origin, and four cases were landed in London. In eight cases complaint seems to have been made in the stage of initial fever, but its significance was rarely, if ever, recognised. As soon as the disease appeared the crews were vaccinated, but much time would have been saved had the crews been kept continuously protected, so that these infections could not have occurred. A seaman from a ship was found at Stepney to have small-pox; his ship was examined and one of the crew, well vaccinated in infancy, was discovered to be recovering from a characteristic, though very slight, attack of small-pox. That case dated back three or four weeks, and the patient's brother and two others of the crew had been left behind at the last port suffering with "influenza"; on inquiry being made they were found to be in a small-pox hospital. The one slight missed case seems thus to have caused at least four others.

In the Port of London, when cases of infectious disease have occurred, cabins or compartments are now disinfected by sulphur fumigation followed by washing down with disinfectant, infected articles and textiles being disinfected by steam. To get rid of rats 40 ships were fumigated with sulphur (average of dead rats found, 62), and 12 with hydrocyanic acid (average of dead rats, 54). A paper reproduced in the report tells how thoroughly rat-proofing is being done at the New York Quarantine Station. The work there is based on the three following principles: (1) Rats want food and water, so these must be kept out of their reach; (2) they want shelter and nests, so there must be no harbourage for them and no rubbish left about to help in nesting; (3) they must be kept in the open by blocking up their runways. Skilfully used, these measures get rid of rats and are inexpensive; Dr. Willoughby thinks that if they are thoroughly carried out they will stop rat-borne plague and the need for frequent disinfestation. A total of 27,128 rats were caught and destroyed in the year—12,746 in the warehouses and 14,382 on ships in docks and river. Of those caught in warehouses ashore, 1929 (1338 black, 591 brown) were examined for plague, but all were free. The visits of medical inspection paid to ships totalled 15,156, and 200 ships were found defective. The principal complaint was of dirty quarters (1535), the most numerous after that being lighting (57), leaky decks (48), sanitary conveniences (45), and ventilation (44). But it was not only ships that were defective; nuisances were also found on shore premises, of which 924 were dirty, and 65 had unsatisfactory sanitary conveniences.

The inspection of imported food is a very important branch of the work of a port sanitary authority, especially of that of the Port of London, and in the year under review over 1400 tons of unsound food had to be condemned, including 109 tons of meat. Some 56,000 beef tongues were examined, and about 2 per cent. of these were found to be infected with actinomycosis. The quantities mentioned are sometimes considerable; the eye is caught by amounts such as 196 tons of dates and 534 tons of "sugar sweepings." The latter may not have contained much sugar, for it is mentioned that chocolate sweepings in another port were found to contain metals, woodwork, glass, and flinty materials. The transport and handling of meat is being carried out in a cleanly manner under the Public Health Regulations, 1924. Under the Public Health (Imported Food) Regulations, 1925, rendered fats are only allowed to be imported if certificated; if not certificated they are stopped unless a guarantee is given that they will be exported or used in some manufacturing process not connected with food. A 10-ton consignment of orange pulp in tins was seized, because the contents had fermented, had been resterilised—thus losing food value—and resealed, the result being that the juice now contained too much tin. Dried fruits are treated with sulphur in the port to kill larvæ and this prevents deterioration. No reference is made to the question of latrines about the docks, which last year's report said was having attention.

PHYSIOLOGICAL CURE FOR MUSCULAR CRAMP.

Dr. G. W. Fitz[1] has recently described a simple form of treatment which he has used in two cases of muscular cramp. One of the patients was an active, strong man of 190 lb. weight. In early life he had had occasional cramp in the feet, and at about the age of 53 had sustained a moderate sacro-iliac strain; dental abscesses had also been present for an unknown length of time. The cramp seizures began when he was 55 years old. They usually came on at night during sleep, and involved the quadriceps and inner hamstring muscles of the lower limbs. He noticed that they were worse after fatigue from standing, and during the attack the agonising pain indicated that every nerve in the hard mass of muscle was pinched as in a vice. After 10 or 20 minutes the muscle became soft, and though a new contraction often started it was of shorter duration and stopped more rapidly under the influence of radiant heat from a fire. Relief from attacks was only obtained by the use of salicylate in full doses, and administration of this drug was continued over a period of two years. The patient's teeth were then extracted; some slight joint trouble was arrested, and with improved health the cramp stopped for two years, after which, however, it began again. On the theory that cramp is due to alkalosis, it occurred to Dr. Fitz that the seizures might be arrested by causing retention of carbon dioxide, and for this purpose he uses the following method. At the first indication of cramp the breath is held, and an empty rubber bag of 3 pints capacity is applied to the mouth; air is then expired into it as late and as slowly as possible. Inspiratory breaths are taken from the bag, but as this is not very large a little of the outside air is sucked into it at each inspiration to meet the deeper breathing which the deficient oxygenation causes. Dr. Fitz states that this procedure prevents oxygen-want, but does not hinder CO_2 accumulation; but the statement is certainly open to criticism since dilution of expired air with atmospheric air will obviously diminish the percentage of CO_2 as it increases the percentage of oxygen. The result of rebreathing from the bag is said to be that the cramp is at once aborted with only a few weak twinges to indicate how severe the attack might have been. Dr. Fitz considers that the condition in the patient he describes is analogous to the tetany or cramp-like effect produced by over-breathing, and he suggests that in his own case the cramp may arise from respiratory acceleration in sleep as the result, for instance, of excitement in dreams. As he points out, there are various conditions of tetany which suggest

[1] Boston Medical and Surgical Journal, Oct. 28th, 1926.

alkalosis as their cause. Amongst them is the loss of hydrochloric acid from the stomach in vomiting from pyloric stenosis or in gastric fistula, but in other conditions more detailed investigations have thrown some doubt on the close application of the theory. J. A. Campbell [2] has recently suggested that all forms of tetany are primarily due to oxygen-want, and alkalosis—whether due to overdosing with alkalis or to any other cause—will act by hindering the blood from delivering up its load of oxygen, as Barcroft and his colleagues originally pointed out. Taking these suggestions together with Dr. Fitz's observations, it would seem that an even better way of treating cramp might be the simultaneous administration of oxygen and carbon dioxide, though this would not be nearly so simple as the method he has devised.

TONSILLECTOMY AND ACUTE RHEUMATISM.

THERE is close agreement between all observers as to the high frequency of tonsillar disease in rheumatic children, percentages round about 80 being usually quoted. On the other hand, there is wide disagreement as to the value of tonsillectomy in preventing rheumatic manifestations. In the report [3] of the special subcommittee on rheumatic heart disease in children appointed by the British Medical Association, Dr. Reginald Miller pointed out some of the fallacies in the various methods previously employed in investigating this problem, giving the results of his own experience in the study of rheumatism as it occurred in children whose tonsils had been removed. He showed that whereas arthritis had been present in 38 per cent. of his cases before tonsillectomy, recurrence of acute joint inflammation occurred in only one of those showing acute rheumatism after operation. Closely similar results are reported in a recent paper by Dr. O. Holsti on the course of acute rheumatic arthritis after treatment of inflammatory processes in the upper air-passages.[4] These results are based on a study of 35 cases of acute and relapsing rheumatic arthritis seen at the Medical Clinic of the University of Helsingfors. There were 13 males and 22 females, and their ages varied from 10 to 60 years. Typical polyarticular acute attacks occurred in 11 cases for the first time just prior to their admission to hospital, while in the remaining cases there had been two or more earlier typical attacks. On admission to hospital each patient received salicylates in large doses, with local applications to the joints, and the acute stages usually passed quickly. Treatment of infections of the nasopharynx and mouth was generally not begun until the acute attack had completely subsided, but exceptions were made in certain cases with protracted convalescence and very marked inflammatory processes in the upper air-passages. No harmful effect was seen in any case, even when the treatment was begun early. (Dr. Miller made the same observation with regard to the harmless nature of tonsillectomy in his cases.) The measures taken consisted of tonsillectomy, operations on infected nasal sinuses and careful attention by a dentist to all inflammatory processes in the mouth. The cases were then observed over a period of four and a half years and in no case did a true relapse occur in a purely rheumatic patient who had reached the age of puberty. One man of 45 with heart disease died after gangrene of the leg occurred, necessitating amputation, and one boy of 10 succumbed to pneumonia and acute carditis eight months after tonsillectomy. In two other cases relapses occurred, but one was complicated by the presence of gonorrhœa and the other was a case of hæmophilia. Some of the remaining patients had minor manifestations of rheumatism from time to time, which Dr. Holsti regards as abortive attacks, but over 50 per cent. remained completely healthy. This series of cases is undoubtedly small and the type of disease must have varied considerably with such a wide disproportion in the ages—namely, 10 to 60. Nevertheless the treatment of inflammatory processes in the upper air passages does appear to have been beneficial in preventing the recurrence of the rheumatic infection in the joints. On the other hand, Dr. Miller had shown in his paper that the occurrence, or recurrence, of chorea is not controlled by tonsillectomy. Such opposite results suggest that the disagreement upon the value of tonsillectomy and other measures in preventing rheumatic manifestations is not likely to disappear unless each manifestation is dealt with separately, since the total clinical picture resulting from rheumatic infection is too complex to permit of simple analysis.

[2] THE LANCET, 1926, i., 72.
[3] Supplement to Brit. Med. Jour., July 3rd, 1926.
[4] Act. Med. Scand., vol. lxv., fasc. iii.–iv., Jan. 26th.

ENDEMIC TYPHUS IN SOUTH-EASTERN UNITED STATES.

WE recently [1] drew attention to a report by Dr. William Fletcher and Dr. J. E. Lesslar on a disease in the Federated Malay States resembling typhus in clinical symptoms and Weil-Felix reaction, but differing from it in its low infectivity and the absence of any evidence of its being transmitted by lice. A somewhat similar disease has since been described as prevalent in the South Eastern United States by Dr. Kenneth F. Maxey,[2] under the title of endemic typhus or Brill's disease. The cases gave a positive Weil-Felix reaction and were clinically indistinguishable from typhus fever except in regard to their relative mildness and low fatality rate, which are characteristic of that form of endemic typhus known in the United States as Brill's disease. Apart from a group of cases in the State of Alabama and in Savannah and Galveston, on which his report is based, Dr. Maxey has collected evidence of the existence of mild typhus corresponding to the description of Brill's disease in other cities and towns in North and South Carolina, Georgia, and Florida. The epidemiology of the disease seemed to differ considerably from that of typhus in the eastern hemisphere. In the first place it reached its maximum in the summer and autumn, in contrast with the high winter and spring incidence of typhus in the Old World. Secondly, as in the Federated Malay States, there was no evidence that infection was transmitted by the louse, which is the usual carrier of ordinary typhus. It did not select the poor and uncleanly, but occurred among all classes, and no cases were found in prisons or asylums. Dr. Maxey suggests that the source of infection in this disease is elsewhere than in man, and is to be found in rodents, probably rats or mice from which it is occasionally transmitted to man. This hypothesis is compatible with the following epidemiological characteristics: (1) the uneven focal distribution of the disease; (2) its sporadic occurrence; (3) its apparent lack of communicability from an infected person; (4) its association with the place of business rather than with the home—particularly with those premises in which foodstuffs are handled or stored; (5) the recurrence of cases on the same premises after considerable intervals of time; and (6) its seasonal incidence.

THE PUERPERIUM AFTER GONORRHŒAL INFECTION.

THE extra attention given in maternity hospitals to pregnant women known to have been infected by the gonococcus has evidently led to such good results that it is tempting to try to draw a moral of more universal application. At the Cambridge meeting of the Medical Society for the Study of Venereal Diseases, reported in our last week's issue, Colonel L. W. Harrison expressed his conviction that the gonococcus was responsible for much puerperal septicæmia. In his experience, however, the cases in the venereal wards of a maternity hospital ran a more level temperature than those in the other wards. Dr. D. C. Logan confirmed this impression.

[1] THE LANCET, Jan. 8th, p. 36.
[2] Public Health Reports, Dec. 24th, 1926, p. 2927.

At the Mothers' Hospital in Clapton the post-partum morbidity appeared to be less in the venereal block than in the clean blocks. This hospital was associated with hostels, and pregnant patients known to have been infected were thus admitted some months before their confinement was due. In a large proportion of these cases the gonococcus could not be found, the usual secondary infection having supervened. Dr. Logan attributed the succession of normal puerperiums in these cases to early and thorough treatment, and Dr. D. Nabarro also commented on the extraordinary way in which copious vaginal discharges cleared up under hospital conditions. The discussion raises the interesting question as to how far the systematic antenatal disinfection of the vaginal flora, if it were practicable, might reduce puerperal morbidity. Those patients who have been segregated in a modern V.D. hostel for weeks or months prior to admission have not only had their vaginal tracts continually disinfected, but also have had no chance of becoming infected by other organisms during coitus late in pregnancy. Many uneducated women still believe the old superstition that regular intercourse near term is beneficial, and will help them to have the much-desired easy confinement. Another point which favours the hygienic condition of the inmates of a hostel is that they are accustomed to take several baths a week, an almost impossible practice for the poor-class married woman living in her own home. Hostel patients are also, no doubt, given regular aperients, and so another fertile source of pyrexia in the puerperium—*B. coli* infection of bladder or kidney—is less likely to occur. Finally, these young women are under daily supervision, and malpresentations of the child are more likely to be noticed and remedied before labour, thus avoiding the need for undue manipulation during labour.

SONNE BACILLUS DYSENTERY IN BRITAIN.

FOLLOWING Dr. R. Richard's account of an outbreak of bacillary dysentery in children at Aberdeen,[1] where, though most of the cases were due to Flexner bacillus, four cases were caused by the Sonne bacillus, Dr. F. H. A. Clayton now (p. 391 of this issue) reports a case of Sonne dysentery in England, having a possible contact relation to the Aberdeen epidemic. In one of the Aberdeen Sonne cases the patient suffered from an arthritis accompanying the dysentery, such toxic arthritis not having been hitherto recorded in association with this organism. After the dysentery epidemics of 1668–72 in England, Sydenham (1672) described arthritis following a definite clinical attack of dysentery. This was forgotten, but the dysentery epidemics of the late war made this toxic arthritis in Flexner and Shiga dysentery well known. Dr. S. H. Clifford [2] has brought forward evidence to show that one type of arthritis deformans in children may be due to a past or present infection with Flexner bacillus which has not produced a recognisable clinical syndrome of dysentery. These facts suggest that all cases of arthritis, at any age, of doubtful ætiology should be examined for infection by dysentery bacillus. Dr. Richards noted that in dysentery the insertion of a finger in the rectum caused tenesmus with expulsion of blood and mucus, whereas in intussusception the rectum is large and roomy and no tenesmus is evoked. This is a clinical observation of some importance, for in this country acute dysentery in the child may easily be, at first, regarded as intussusception. The subject of digital rectal examination not unnaturally suggests sigmoidoscopy—for subacute cases. Tropical practitioners have now learnt from experience that sigmoidoscopy is indispensable for the accurate diagnosis of all cases of so-called colitis. The method has made it much easier than formerly to demonstrate the causal organism, by culture or microscope, in the mucus picked off an ulcer or inflamed patch of mucosa. Its routine use has shown, as Dr. Richards surmised, that bacillary dysentery is not so rare among some populations as was generally believed. Thus K. Saisawa and B. Tanabe,[3] in the examination of recruits in the Japanese Army in Tokyo, found that sigmoidoscopy gave more successful results than even fresh cultures from stools, and many apparently healthy carriers of dysentery bacillus were detected by its aid. Furthermore the sigmoidoscope revealed that the great majority of these were not healthy but, in fact, were very mild cases of dysentery with slight lesions in the colon—so mild and so slight that infection with dysentery bacillus had not been suspected.

[1] THE LANCET, Feb. 12th, p. 343.

[2] American Journal of Diseases of Children, 1926, vol. xxxii., No. 1.

[3] Philippine Jour. of Science, 1926, vol. xxx., No. 3.

THE PRINCESS MARY, F.R.C.S.

ON Feb. 14th Princess Mary, Viscountess Lascelles, was admitted an honorary Fellow of the Royal College of Surgeons of England, being the first woman to receive this distinction. Wearing the robes of a Fellow she attended the Hunterian Oration delivered at the College by Sir Berkeley Moynihan, the President, and published at the beginning of this issue of THE LANCET. In the evening the Hunterian Festival Dinner was held at the College. After the toast of the Memory of John Hunter had been honoured in silence, Sir Cuthbert Wallace, vice-president of the College, proposed that of the Guests. To this Lord Riddell replied, and passed appositely from some jocular words, instigated by the menu, as to the ability of medical men to eat whatever they felt inclined, to a wise warning as to the depressing influence of the broadcasts in the press as to the harmfulness of many common forms of diet. The toast of the President and Hunterian Orator was proposed by Viscount Lascelles, who acknowledged the high appreciation of the Princess Mary of the honour conferred upon her by election to the Fellowship of the College. He delivered a message to the President from the Princess signifying that her Royal Highness considered the diploma as setting a seal on work which she had attempted during the last six or seven years, as the war had brought from her personal work in the alleviation of suffering.

THE Home Secretary has appointed Dr. G. Roche Lynch to be Senior Official Analyst to the Home Office, in succession to the late Mr. John Webster. Dr. Lynch has since 1920 held the appointment of Junior Official Analyst to the Home Office.

WE offer congratulations to Dr. John Moore Swain of Long Clawson, Melton Mowbray, who has recently celebrated his hundredth birthday. Dr. Swain became a licentiate of the Society of Apothecaries in 1849, and a Member of the Royal College of Surgeons in 1850.

THE next social evening of the Royal Society of Medicine will be held on Monday, Feb. 21st, at 8.30 P.M. Fellows and guests will be received in the Library by the President and Lady Berry, and at 9.30 P.M. Mr. Percy Flemming will give an illustrated address entitled Topographical and Medical Notes on Harley-street. There will be an exhibition of prints and maps of the neighbourhood.

THE forthcoming revision of the International List of the Causes of Death, discussed in our leading article last week, will be undertaken by a conference called, as in former years, by the French Government. So far there has not been universal agreement that the Health Section of the League of Nations should undertake the task of arranging conferences to deal with this question. The League is, however, attempting to collate recommendations from this and other countries.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCXI.

THE TREATMENT OF NIGHT TERRORS IN CHILDREN.

NIGHT terrors may be temporary disturbances without significance for the future welfare of the child or may be the sign of a nervous tendency which in itself calls for careful handling in order to avoid psycho-neurotic reactions in later life. Except in degree there is no difference between them and nightmares, but the extreme forms cause so much distress to the parents that treatment will be urgently demanded. We cannot claim to know definitely any general or specific cause; night terrors are akin to the anxiety dreams of adult psychoneurotics and in some adult cases a recurrent anxiety dream of constant type may exhibit an unbroken continuity with an infantile night terror that possessed the same content.

Physical Factors.

Physical disorders can stimulate these troubles, though their importance is less than is sometimes supposed. A heavy supper may cause enough discomfort to provoke a nightmare; but patients subject to anxiety dreams find that the time or quantity of the evening meal makes no difference to the symptom. So in the child a careful elimination of physical irritation may lead to the disappearance of the terrors; but after adenoids, intestinal parasites, constipation, errors in diet, and all other probable causes of irritation have been removed, there will remain cases in which a source of fear must be presumed to exist in the mind of the child.

Sometimes the cries of the child may give a clue which enables the parent to recognise the influence of an actual incident, of a foolish threat, or a terrifying story. In such a case the child should be encouraged to talk about the matter, either at the time of the nocturnal disturbance or during the day. Modern experience leads to the belief that to prevent nervous trouble, whether as night terrors or in any other form, it is better to encourage the child to talk out a terrifying experience rather than, by a careful avoiding of it, to let the memory remain as an unassimilated mental fragment.

The Effect of Excessive Care.

There are, however, cases in which fright of any kind can be confidently excluded. The child has been carefully secluded from rough knocks of any kind, the nurse is above suspicion, and yet there is displayed an unaccountable nerviness which shows itself particularly in night terrors. An only child, or the youngest of several, often shows this sequence, in which it is at first sight impossible to imagine any cause for the nervous manifestations.

Certainly there is an inborn tendency to excessive reaction, for quite young babies show wide differences in their reactions to simple stimuli such as sudden noises, but night terrors are matters of later years, and even when we have weighed the factors of inborn temperament and physical stimuli the conceptual content of the terrors demands some hypothesis. It is notable that the carefully brought up child is more liable to suffer than another brought up in rougher surroundings, and the investigation of nervous adults has thrown enough light upon the mental processes of the child to enable us to guess at the possible harmful results of excessive care. The over-anxious parent tends to stress the emotional aspect of those prohibitions which form so great a part of the education of the child.

The teaching of sphincter control and the enforcing of the demands of modesty, for example, may be carried out with an emotional emphasis which easily produces in the child the conception of an unknown something which must not be offended, and here may be one source of the fear that manifests itself as nervousness.

Investigation of adults has shown, too, that the childish mind is busied with thoughts about sex and reproduction to a degree which, on account of our loss of memory for our early years, we do not usually suspect. The non-recognition of this fact allows of incidents taking place in presence of the child which may stimulate in him the sense of dread and mystery. To share the bedroom of the parents obviously provides the opportunity for such incidents, and here may be found an explanation of the greater liability of the only or youngest child to suffer from night terrors; the birth of a child usually ensures for its predecessor a healthy banishment from the parental bedroom.

Apart from this, it is plain that, if parents decide that the curiosity of the child as to sex and reproduction is to be unsatisfied and inevitable questions are to be shelved, the danger of untoward incidents is great; there is nowadays, however, a tendency for these subjects to be handled frankly and unemotionally as soon as they arise and this method may be expected to avoid at least some of the nervous troubles of childhood. The principle should be widely applied and we must remember that any subject in which the child scents mystery may become a source of fear. Death, as much as birth, may become the subject of half-conscious fearful speculations although the child, if allowed to do so, accepts either without any special sense of mystery.

The provision of material for fearful speculation may explain why carefully brought up children are subject to night terrors; but these remarks about the possible source of the symptom are to be considered chiefly from the point of view of prevention. It is practically out of the question to elicit from the child what that source is: terrifying hallucinations may be described but their significance remains hidden as far as investigation of the child can tell us. This difficulty need not prevent us from offering to an intelligent child an explanation of the faculty of visualisation and suggesting that the hallucinations should become a source of interest rather than of fear. This can do no harm and occasionally succeeds.

A Secondary Factor.

There is a secondary factor in these, as in so many nervous symptoms. The nocturnal disturbance obtains for the child the presence of the loving parent, and this satisfaction may help to maintain the symptom. To take the sufferer into the parent's bedroom is therefore a step to be avoided, and in every case it should be obvious that the less emotion there is shown the better. In fact, separation from the parents may sometimes be clearly indicated and their resistance to such a proposal is often a measure of its necessity.

On the other hand, the removal of specific causes of fear is justifiable. One child may be perturbed by a ray of light, another by darkness, and for another the presence of a particular object may stimulate fear, and adjustments should be made accordingly.

Symptomatic Treatment.

When attention has been paid to the physical condition of the child and to the material and emotional environment, when sympathetic attempts have been made to get the child to talk freely about the nature of the terrifying hallucinations, and when the parents have been properly treated, there will remain cases where we are driven to symptomatic treatment. Bromides may then be tried in the usual doses or luminal (pheno-barbital) in quarter-grain doses at night for a child of five.

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Special Articles.

MATERNITY AND CHILD WELFARE: CONFERENCE AT NEWCASTLE-ON-TYNE.

A CONFERENCE was held on Feb. 10th, under the auspices of the Maternity and Child Welfare Group of the Society of Medical Officers of Health, Dame JANET CAMPBELL presiding. All parts of Great Britain sent representatives who were entertained by the Lord Mayor of Newcastle at a reception on Feb. 9th and at luncheon on Feb. 10th. On Feb. 11th maternity and child welfare centres in Newcastle and Durham County were visited, also various voluntary institutions having the care of children.

In reply to the civic welcome Dame Campbell said that this was the first conference of its kind held in the North of England. It was a purely medical conference. When they had had meetings in London they met not only medical colleagues but lay colleagues interested in maternity and child welfare. That had its advantages, but it tended rather to hamper discussion of medical topics, so that a meeting at which work could be discussed from the medical aspect only was welcome.

Dr. A. F. G. SPINKS opened the conference by reading a paper on the

Development and Future of Maternity and Child Welfare.

He said that the development of the maternity and child welfare movement was probably the most convincing of the many signs of an awakening public interest in public health. It was almost unheard of 25 years ago, and yet though it had been started with all the financial and other disabilities inseparable from voluntary activities it had nevertheless gripped the imagination from the outset and had made for itself a safe and permanent abiding place in national affairs. To-day nearly every district—both urban and rural—had its maternity and child welfare scheme, and in England alone there were more than 2000 centres from most of which came reports of rapidly increasing attendances. At the Newcastle centres the attendances had increased from 4000 in 1918 to 50,000 in 1926. Dr. Spinks traced the development of child welfare work from a centre established in Ghent in 1901. In 1924–25 the total expenditure on maternity and child welfare work in this country amounted to about 1½ million pounds, which represented less than one halfpenny a pound in a national budget of over 800 million pounds—not a large sum to spend on so important an object. Preventable ill-health cost the nation many times that amount annually. Those concerned with promoting maternity and child welfare had two main objects in view: first to maintain in good health those who were already healthy—practically every child was healthy at birth—and secondly to improve and increase national efficiency. Thus in principle the movement was essentially preventive and, since it dealt with the health of the public at the outset of life, it must be the basis of public health. Experience had proved that a great deal of the suffering prevalent among young children was due not so much to want of money as to want of knowledge, and unfortunately this want of knowledge prevailed on a vitally important subject from the child's point of view, that was its proper food. At the present time the bottle-feeding of infants was rampant, and unless the craze was checked England would become a bottle-fed nation. There was nothing but teaching at maternity and child welfare centres to save us from such calamity.

The future of the work was assured because it was inconceivable that we should ever be allowed to slip back to the days when infants and young children were allowed to be the victims of undisturbed indifference or mismanagement, and needlessly sacrificed. Rather did he see maternity and child welfare expanded until it embraced within its benign fold every expectant mother and every child irrespective of class. He thought he saw the day coming when we should have health visitors with higher qualifications, and perhaps, some day, with medical degrees. The health and welfare of our mothers and children were national assets, and, as such, ought not to be left to the uncertain caprices of voluntary efforts which—praiseworthy though they were—must always be handicapped by want of money, and by their charitable nature, which made them offensive to a large section of the community.

Dr. Spinks envisaged the day when infants' hospitals, few in number at present, would be numerous and when many of those in industrial areas would have their own country or seaside convalescent homes. The future would also bring a wide extension of open air and natural and artificial sunlight treatment, and unnecessary artificial feeding would be rigidly checked or abolished altogether. A halt must not be called in this work until every preventable calamity that befell women and children had been studied with good effect. When that day came there would only be one thing more for the maternity and child welfare movement to do, and that was to pass on the preventive principles upon which it was founded to the general public, so that instead of having as now an army of doctors curing disease we should have an army of doctors preventing it.

In the course of the discussion Dr. MARION MACKENZIE (Leeds) expressed the opinion that maternity hospital nurses should be better trained. They did not know enough about the feeding of infants.

Dr. CHRISTINE THOMSON (Durham) suggested that one of the greatest obstacles to the progress of child welfare work lay not in the difficulties of finance, nor in a lack of public interest, but in the scarcely veiled opposition of the general practitioner. The general practitioner regarded the tuberculosis officer or V.D. officer as a specialist, but did not apparently regard the medical welfare officer as a specialist even in infant feeding, and frequently would alter the diet of a dyspeptic baby without consulting the welfare officer.

Dr. ELIZABETH LANE (Newcastle) spoke of the enormous increase of artificial feeding since she first attended a welfare centre in 1913. One reason was that many mothers did not know how to breast-feed children successfully. The result was early evidence of indigestion and a consequent weaning of the baby simply through ignorance. A second reason, perhaps equally important, was the enormous amount of free food that had been distributed throughout Great Britain in recent years. This encouraged the worst type of mother—the young mother, married on the dole and irresponsible, living with her own or his people. A baby arrived and she was only too anxious to hand it over to its grandmother to be fed with free food, because then she was able to go out and enjoy herself. Weaning often occurred soon after a mother got up when there was a temporary failing of breast milk. Then was the time for the health visitor to give useful advice.

Dr. MARGARET EMSLIE (London) expressed the opinion that one of the chief difficulties in connexion with breast-feeding was that they were up against the commercial spirit, and that people who had the temerity to announce the arrival of a baby through the press were assailed through the post by a number of firms selling artificial foods, gripe water, cod-liver oil, and so on. Such propaganda carried on while the mother was just recovering from confinement and was very receptive to influences was bad.

Dr. SPINKS, in reply, said with regard to artificial feeding he agreed that it was a matter of teaching doctors and everyone else, not only mothers. Very few people knew anything about babies. Dr. Thomson had raised the question of the general practitioner's attitude. That again was a matter of opinion. His own experience had been a happy one, and he personally had nothing to complain of in Newcastle. The doctor looked at the question from the mother's point of view, and the welfare officers looked at it

from the point of view of the child. They said they were not taking patients away from the medical practitioner; they were actually sending him patients. Bottle-feeding was increasing in many places not for want of money, but for want of knowledge. His experience among the miners who were on the dole and getting little money was that their wives were well able to keep on breast-feeding their babies if they had the knowledge and desire to do so.

Infant Feeding.

Dr. H. GLEN DAVISON read a paper on the Feeding and Care of the Premature Infant in the Princess Mary Maternity Hospital. He stated that last year they had 165 single premature births and 36 cases of twins, making a total of 201 prematurely born in hospital. Out of these 70 had been stillborn, which left 131. Of these 29 had died and they had been able to send home on the tenth day after birth 102, or 78 per cent. of the whole. Dr. Davison said that they had thrown the teaspoon away as a form of measurement, and he described how they worked on set formulæ which showed just what a prematurely born infant was receiving in protein, fat, sugar, and calories. Whilst they were ready to vary the formula at need it was essential to know at the outset exactly what they were giving the infant and why they were changing from one food to another.

Dr. JAMES A. STEPHEN discussed some practical points in infant feeding. Many mothers, he said, complained that the milk left them when they got up out of bed, and he suggested that this might be due to physical causes. Often a mother would get up and sit by the fire for a short time insufficiently clad and catch cold. Whilst agreeing that breast-feeding was the form of feeding most to be desired, Dr. Stephen stated that a mother's diet of tea and white bread would not provide the wherewithal to feed an infant, and he had had to change his methods in the last year or two on recognising how many mothers were in poor health and anæmic. He had had to make up his mind whether a woman was really fit to breast feed her baby with anything like complete results, and he had had to supplement or change the method of feeding altogether, so that largely because of the general condition of the mother he was not so whole-hearted a supporter of breast-feeding as he was. Dr. Stephen examined the requirements of the under-weight child and the measures that could make milk more digestive to the artificially fed child, showing how lactic-acid milk had outstanding advantages over sweet cow's milk. It ought to be possible to prescribe a suitable diet for any child. Most of the patent foods were more expensive than cow's milk, but where a mother was careless or ignorant it was often convenient to order those foods. Dr. Stephen also emphasised the necessity of knowing exactly what was being given to the child. Unless they could prescribe a diet that could be easily and accurately made up it was better to turn to the patent food, because mothers would not take the trouble to make anything that was not easy. Dr. Stephen pointed out that although the patent food manufacturers were in business for commercial purposes, some of them were very interested in welfare work and by scientific research were trying to help it on. They should be encouraged in this by the coöperation of the medical profession.

Dr. T. Y. FINDLAY, speaking on the clinical value and uses of measuring infants, said one might actually feed a child by its height. It had been shown that for every centimetre of its height a normal, healthy child absorbed 14 g. of mother's milk. So if they wished to know how much to give a child they could measure it and from that calculate its food. He did not, however, think this method strictly accurate. Dr. Findlay discussed the advantages and disadvantages of this and other methods of estimating food requirements. In the subsequent discussion it was suggested that the process outlined by him should be of practical value especially in connexion with observation wards and special clinics where certain infants were difficult to deal with.

Mr. F. C. PYBUS spoke on pyloric stenosis in infancy chiefly from the surgical standpoint, and discussed the eugenic problem of good parentage as a factor in promoting child welfare.

Dr. MABEL BRODIE read a paper on

Maternity and Child Welfare Problems in a County Scheme,

in which she stated that most county problems would be solved if sufficient money was available, but to-day it seemed impossible to get enough money to do the work efficiently. Health visiting, she thought, would always present difficulties in the counties, because there was nothing that provoked more discussion than the duties of a health visitor—whether district nurses ought to do the health visiting or whether a special officer should be set aside for that purpose. Unless the number of health visitors was adequate no following up could be done. It was a great advantage to have a health visitor attached to a medical officer attending a centre so that she could see that a mother was carrying out the advice given her. Antenatal work was still a problem in most places, and where one had no separate antenatal centre existing it was difficult to get into touch with expectant mothers.

Although many county centres were crowded out with infants they had not yet solved the problem of dealing with the pre-school child. For this they required more officers and better premises and facilities. It did not seem possible to provide separate sessions for these children, partly because in the mining areas particularly the mothers found it difficult to get away more than once a week.

Dr. F. H. MORISON spoke of the difficulties of carrying on maternity and child welfare work in his county area, where a population of 200,000 was scattered over nearly a million acres. Practically all the travelling had to be done by motor; sometimes a health visitor could only visit one baby in a day, going by train for 20 miles, then bicycling for another six or seven, and walking two or three miles more. A motor dental van had done excellent work all over the rural areas. He had anticipated the difficulty in getting hold of the parents and children, but so many came that he had recommended his committee to start another dental van which would act also as a maternity and child welfare clinic. That was the only way he could see it possible to deal with such a scattered population over such a huge area.

Dr. EUSTACE HILL said that Dr. Brodie had worked in the county of Durham some seven years, and the great advance that had been made in the county were due largely to her enthusiasm; the estimate last year for maternity and child welfare work in the county was nearly £60,000. Unfortunately owing to the coal trouble they had been landed into increased expenditure and, rightly or wrongly, in the feeding of the pre-school child and the nursing mother the sum of over £100,000 had been spent in addition to the normal expenditure. Further development was at present not possible, but extension of the nursing services and provision for orthopædic cases were schemes to be undertaken in the future. As to the use of district nurses as health visitors, many of the former had been trained to look on their work from the curative rather than from the preventive side. A district nurse often required two or three months' special training on the preventive side of health work before she became efficient, so personally he was strongly in favour of well-qualified health visitors trained as such. Speaking of clean milk-supply Dr. Hill said he had been amazed at the amount of tubercle bacilli to be found in the milk in country districts. Since cows had been found in the byres yielding tuberculous milk a welfare medical officer must be very careful in ordering or recommending unboiled milk for young children.

Mr. HARVEY EVERS communicated common observations on stillbirth and its prevention by antenatal methods. Mr. Evers was an optimist about antenatal supervision, though in spite of it some babies and mothers would still be lost, since errors

could not be excluded. Antenatal care would, however, save large numbers of babies, and they had every reason to believe that by tackling the question of antenatal care a material difference to the rate of maternity mortality and stillbirths could be made. In reply to a question, Mr. Evers said he would trust no case entirely to a midwife. No woman should be allowed to go and pick a midwife. She should have to go and pick a doctor and a midwife, and the doctor should then pass the patient as suitable and fit to have labour carried through by the midwife. Antenatal care should not be entrusted to a midwife.

THE LIMITATION OF EXPERT EVIDENCE.

(BY A LEGAL CORRESPONDENT.)

IN the course of a long case which is now before him in the Chancery Division, Mr. Justice Tomlin has had something to say in relation to the calling of expert witnesses. He pointed out that there are very few aspects of life to-day which escape the cunning eye of science, so that in many cases it is open to the parties to introduce a string of experts. He went on to say that if a litigant was left free to call all the evidence possible, it placed a weapon in the hands of persons of large resources. He therefore enunciated a rule, which he proposed to follow in the case before him, that only two experts should be called unless there were special circumstances justifying a party in asking that more should be heard. In the present instance—an inquiry into the cause of the flooding of certain mines in South Wales—the plaintiffs' case had taken 26 days, and their two experts had been so fully heard that the issues had become plain. Any rule limiting the amount of expert evidence would be of considerable importance to the medical profession. In the first place, no member of the profession wants to go to court as a witness more often than he can help. Apart from the time he spends in preparing and giving his evidence, he is often compelled to make a long journey to a distant court only to find that the case has been adjourned. In the class of action in which the medical profession has but too good a reason to take an interest—namely, the action for malpraxis—to support a charge of negligence the plaintiff will of necessity rely upon the evidence of practitioners drawn (if possible) from the front of the profession; to refute the charge, the defendant will endeavour to procure the best evidence he can. Those who have the conduct of such litigation know well its cost—indeed the knowledge is made common by subscription lists in the medical journals. Any rule, then, which would limit the number of *mere* expert witnesses on *either* side would necessarily diminish the expense, and the length of the hearing of an action for negligence. It would be so far to the good. But if such a rule endangered the rights of litigants no consideration of convenience or expense will justify it.

Some people, of course, may take the view that to place any limitation upon the right to call experts is to unduly restrict the privileges of a litigant. But it is conceived that when the true meaning of "expert evidence" and the proper functions of an expert witness are appreciated, no hardship can occur. As the learned judge took care to point out, a true and accurate knowledge of science and scientific principles may be essential for those who have to apply the law to the facts of particular cases; and although a learned judge may know something of medicine, he cannot hope to do justice unless he is assisted by those who have made it a lifelong study. But there is all the difference in the world between a mere witness and an "expert" witness. The one is called to prove the existence or non-existence of certain facts; the other is there to express an opinion as to what will or is most likely to happen, given a certain set of facts. His opinion (if he is a doctor) may not be shared by another practitioner of equal standing in his profession; but it will be for the court to decide which opinion to adopt in determining the issue in the case. In these circumstances it is manifest that an expert must base his opinion upon reasons which he can explain to the judge, and he is the best expert who can best explain himself to one who may have but an inkling of scientific knowledge. Some examples may be interesting.

It was held in an old case (R. *v.* Wright (1821), R. & R. 456) that a witness having medical qualifications may be asked whether such and such appearances, proved by other witnesses, are, in his judgment, symptoms of insanity. But a doubt was expressed as to whether such a witness can be asked whether from other testimony given, the act with which the prisoner is charged is in his opinion an act of insanity, that being the very point to be decided by the jury.

It was held in a recent case that the evidence of a medical man was admissible as to the materiality of facts not disclosed in an action on a policy of life assurance (Yorke *v.* Yorkshire Insurance Co., [1918] 1 K.B. 662).

The evidence of experts, however, does not stand much chance if mere theory is opposed to fact. So in a case heard in 1861 (Brock *v.* Kelloch, 30 L. J. Ch. 498), the question was whether a child was or was not born alive. The evidence in the affirmative of the accoucheur, who attended the mother in her confinement, and who was a person of competent skill and integrity was taken to outweigh the contrary opinions of numerous medical men of eminence who were subsequently consulted upon the facts stated.

Viewing the position of an "expert" from this standpoint, it will be seen that the intention is to place a limit, not upon the amount of evidence, but upon the amount of "opinion" which is to be voiced upon the scientific result or effect of that evidence. As the rule is to apply equally to plaintiff and defendant there is no reason to apprehend that it will be attended with any serious consequences to the administration of justice. One thing is certain: it will tend to diminish the costs of litigation.

INTERNATIONAL OPHTHALMOLOGICAL CONFERENCE.

EARLY in October last, following on a resolution passed at the general meeting of English-speaking ophthalmologists in July, 1925, a small committee convened by Mr. E. Treacher Collins sent out a general notice to ophthalmological societies and ophthalmologists in all parts of the world, asking them to nominate two delegates from each country to confer on the question of the re-establishment of International congresses and on other matters of International ophthalmological interest. The response to that notice has been widespread, and already all the principal countries of the world have indicated their approval of the project, and for the most part have named their delegates.

Arrangements have been made provisionally for the committee to meet at The Hague on Tuesday, July 12th, on the invitation of the Netherlands Ophthalmological Society. Mr. Treacher Collins will attend as convener of the conference.

The delegates nominated are:—Argentine: Prof. Dr. Enrique B. Demaria and Prof. Dr. Raúl Argañaraz. Austria: Dr. Adalbert Fuchs and Prof. Dr. Josef Meller. Belgium: Dr. Henri Coppez and Dr. Léon Weekers. Bulgaria: Prof. Dr. C. Pascheff and Dr. Slavoff. China: Dr. T. P. Lee. Czecho-Slovakia: Dr. A. Elschnig and Prof. Lese. Denmark: Dr. K. K. K. Lundsgaard and Dr. Chr. F. Bentzen. Finland: Prof. V. Grönholm and Dr. Y. G. Lindberg. France: Dr. Morax and Dr. Terrien. Germany: Herrn Prof. Dr. Axenfeld and Herrn Prof. Dr. Wessely. Great Britain: Sir J. Herbert Parsons and Mr. Leslie Paton. Holland: Prof. Dr. G. F. Rochat and Prof. Dr. J. van der Hoeve. Hungary: Prof. Emile de Grósz and Prof. L. de Blaskovich. Japan: Prof. S. Ishihara and Prof. Oguchi. Norway: Prof. Dr. Hagen and Dr. Malling. Roumania: Dr. C. Pandelescu and Dr. N. Rásvan. Spain: Dr. M. Marquez and Dr. F. Poyales. Sweden: Prof. Fritz Ask and Prof. Albin Dalén. Switzerland: Prof. J. Gonin and Dr. Ernst Pflüger. United States: Dr. G. E. de Schweinitz and Dr. Arnold Knapp.

The following countries have intimated their intention of taking part, but have not yet nominated their delegates: Cuba, Italy, Poland, Yugo-Slavia.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Medical Inspection of Berlin Schools.

THE Berlin municipal authorities have decided to appoint henceforth only full-time medical officers to the municipal schools. The number of medical officers will be increased and the number of children for whom each is responsible will be reduced. This is very well from the standpoint of hygienic control, but there is one great drawback to the scheme. Hitherto medical officers have had to do no more than inspect the children and give advice to the parents, but it is now proposed to extend their activities to include attendance in cases of illness, the regulations stating that the medical officer will have to attend a sick child when there is no guarantee of regular attendance by some other medical man. This decision has caused alarm in medical circles, especially amongst those engaged in children's practice. Their work in Berlin was already much limited by the establishment of municipal dispensaries for infants, where the mothers receive medicine and refreshments at low prices, or even free of charge, and where medical attendance is given on a large scale. Medical men whose practice has already suffered so much by the work of the clubs, and in other ways, will again sustain a great loss when the new regulations come into force, and it is to be hoped that the representatives of the profession will do everything in their power to combat them.

Medical Articles in the Lay Press.

Prof. Julius Schwalbe, the editor of the *Deutsche Medizinische Wochenschrift*, has been drawing attention to the increase of articles on medical subjects in the daily press and to certain nuisances connected with them. As I explained some time ago [1] the daily papers have been in the habit of regularly publishing articles, either by medical members of their staff or by other medical men, sometimes of great scientific renown. Lately there has been discussion in the daily press of difficult scientific matters, like the properties of vitamins and hormones, and the public, getting confused, has been led to consult quacks who are not troubled with such medical controversies. Medical articles in the daily papers, far from combating quackery, as was intended, thus help to increase its influence with laymen. On the other hand, descriptions of symptoms of diseases such as arterio-sclerosis, hypertonia, tuberculosis, and cancer which appear in daily papers, and are read by a large section of the public, are capable both of producing *malades imaginaires* and of alarming really sick people. Prof. Schwalbe thinks that the lay press ought to abstain from describing symptoms and discussing diagnostic and therapeutic methods; the only medical articles that should be published are those on prophylaxis and hygiene. He holds that this would incidentally prevent any imputation that the articles are written rather for personal advertisement than public education.

Responsibility of Medical Men for Abuse of Cocaine.

A medical man has recently been prosecuted because he prescribed cocaine for healthy people, thus enabling them to get it from a pharmacy. The German Supreme Court in Leipzig in its decision on the case stated that by an international treaty Germany has bound herself to limit the use of opium, morphine, and cocaine to the treatment of diseases and to prohibit it for other purposes. Therefore the import, export, production, and sale of those drugs is allowed only by special licence. Pharmacies do not require a special licence and may dispense these drugs on medical prescriptions, but a medical man prescribing cocaine for other than curative purposes is liable to be punished. Where a chemist has executed the doctor's prescription in good faith he may be held guiltless, but if he has done so knowing that the cocaine is to be used for other than medicinal purposes he is punishable as an accessory.

Supply of Drinking-water to Boats on the Rhine.

The water-supply to the Rhine steamers is somewhat defective, according to Dr. Klein, chief of the Düsseldorf Institute of Hygiene. It is true, he says, that posters in the ships warn people against drinking Rhine water and recommend the use of drinking-water specially carried on the ships. This water, however, is often kept in tanks standing on deck, the water thus being lukewarm in summer and frozen in winter. The tank itself is often found to contain mud, and river water is used to wash it out. Examination of a tank on board a steamer showed the presence of *Bacillus coli*. Investigation of some of the pumps ashore gave similar results, and strict regulations have now been carried out concerning the quality of drinking water and the cleansing of tanks. A still more efficacious measure is the provision of a tank boat which can steam along the Rhine to supply water to the ships, and a number of these boats are under construction.

Marriage and Mortality.

Dr. Silbergleit, director of the Berlin Municipal Statistical Office, recently read before the Berlin Society for Public Health a paper on the influence of marriage on mortality. Between the ages of 20 and 30, he said, the death-rate is higher among bachelors than among married men; for women, on the other hand, the mortality of the married is 25 per cent. higher than that of spinsters, owing to the dangers of pregnancy and childbirth. After the fortieth year of age there is no difference in the death-rate of married and unmarried women. The expectation of life for an unmarried man 25 years of age is 35 years; for a married man it is 41 years, and for a widower 33 years. The expectation of life for an unmarried woman of 25 is 40; for a married woman 42; and for a widow 39 years. For a man marriage thus apparently means an improvement in the chance of living, whilst for women it has not so marked an influence.

Specialism in Germany.

Of the 44,000 qualified German medical men not less than 14,000 (or 32·5 per cent.) are specialists. Of these 2428 describe themselves as specialists in skin, venereal, and urogenital diseases, and there is thus one specialist in these branches for every 26,000 of the population. There are 1688 specialists for internal diseases, 1661 for nervous and mental diseases, 1536 surgeons, 1479 gynæcologists, 1399 aurists and laryngologists, 1188 oculists, 975 pædiatrists, and 310 orthopædists. A further 570 combine general surgery with gynæcology, and there are 409 specialists for pulmonary diseases, and 239 for gastric affections. The specialists live almost exclusively in the larger towns, except those who are associated with sanatoriums or other institutions in the country.

[1] THE LANCET, 1926, i., 881.

MEDICAL STUDENTS AND HOSPITAL CARNIVALS.—Mr. C. Grant Robertson, Principal of Birmingham University, has uttered "a note of warning and misgiving" upon the amount of time consumed by preparation for hospital carnivals. "The annual carnival," he says in his report to the Court of Governors, "threatens to become a dangerous Frankenstein. The cause is admirable, but if it is going for the first four weeks of a term to absorb the full time, thought, and activities of a large body of students, their work and the work of the University will seriously suffer."

LEGACY OF £73,000 TO AN ORPHANAGE.—At a sitting of Lancashire Chancery Court on Feb. 7th the Vice-Chancellor issued a declaration to the effect that the "Liverpool Seamen's Orphanage" and the "Royal Liverpool Seamen's Orphan Institution" are one and the same institution. The funds of the establishment will benefit to the amount of about £73,000 under the will of the late William Reed Pearce, who died last October. The sum was bequeathed to the "Liverpool Seamen's Orphanage," although by Royal Charter the title of the charity was altered in May, 1921, to the Royal Seamen's Orphan Institution.

Correspondence.

"Audi alteram partem."

THE MANCHESTER MEDICAL SCHOOL.

To the Editor of THE LANCET.

SIR,—As the Manchester Medical School is now well over 100 years old, it seems desirable that material relating to its history and the history of medicine generally in the town should be collected carefully lest it should be lost. The Manchester Medical Society has therefore decided to collect and store in its library all material relating to this history, and we are now writing to appeal for such material.

It is difficult to define what is wanted, but we may make a few suggestions—namely, papers such as minute books or lists of students of the earlier medical schools, pictures of these schools, diplomas and certificates granted from the schools, reports of prize-givers and inaugural addresses, photographs of the medical men of past generations, and letters and diaries written by them. The following episode may be used to illustrate the height of our ambition. In 1840, in the opening address, Thomas Turner, pointing to a small oval table painted green and set on small wooden wheels, which stood near him, said: "Excuse me making a digression and directing your attention to that table; mean looking, insignificant, intrinsically of no value as it is, it was the table of John Hunter. This is John Hunter's dissecting table. It would seem almost as if the glory of London Anatomy were travelling northward, and that we had arrested it in Manchester. It is more than likely that, on that very table, John Hunter prepared some of those splendid specimens which now enrich the walls of the museums of the Royal College of Surgeons. Let us now, therefore, that we possess a relic of that great man, be stimulated, by the associations it awakens, to pursue the same path that he pursued." Alas this relic has disappeared.

Doubtless the relatives of former leaders of medicine in Manchester are now scattered all over the world, but this letter may remind them that the memory of those leaders is still treasured. Communications should be made to Dr. Leech, the Manchester Medical Society at the University of Manchester.

We are, Sir, yours faithfully,

ALFRED A. MUMFORD, M.D.,
President of the Manchester Medical Society.
E. M. BROCKBANK, M.D., F.R.C.P.,
Feb. 14th, 1927. Chairman of the Library Committee.

SANATORIUMS AND PUBLIC PREJUDICE.

To the Editor of THE LANCET.

SIR,—It has been my misfortune in the short space of the past four months to have no less than four patients suffering from curable or border-line phthisis discharge themselves from sanatoriums after a stay varying from one week to two months.

As taxpayers we contribute towards a huge sum annually to maintain the sanatorium method of dealing with tuberculosis, and as doctors we are responsible for seeing that the money is not wasted. I have, therefore, taken some pains to discover why these patients would not stay until discharge, and I find that all four of them make two complaints which would seem to be worth making public.

(1) They all objected to living with advanced cases. As one man's mother said: "It took the heart out of him to have a young chap like him dying in the next bed."

(2) They all complained that they "weren't given no medicine nor treatment nor nothing," and consequently did not see how they could be getting better.

To take the second point first, surely it would be possible for each patient on arrival to have explained to him the principles of treatment, why no medicine would be ordered for him, and how he would get better without medicine, and consequently why he should stay until he was cured.

The first point, I take it, is a question of finance, but it seems to me rather straining at the gnat to deny the extra sum required while we swallow the camel of £2,600,000 annually.

I am, Sir, yours faithfully,

NEVILLE M. GOODMAN.
Lymington, Hants, Feb. 14th, 1927.

DEATHS UNDER ANÆSTHETICS.

To the Editor of THE LANCET.

SIR,—May I be permitted to give the strongest support in my power to the views expressed by Dr. Stanley Sykes in his letter of Feb. 12th? They are chiefly an enforcement of the doctrine which is too often lost sight of—that safety in anæsthesia depends mainly on the anæsthetist. The drug and the method are secondary considerations, so far as safety is concerned. It is not, in common talk, the gun, but the man behind the gun which matters most. This truth has never been more forcibly expressed than it was by the Anæsthetics Committee of the British Medical Association years ago. That committee stated: "They are convinced that by far the most important factor in the safe administration of anæsthetics is the experience which has been acquired by the administrator." There is no such thing as an absolutely safe anæsthetic, and only an ignorance of physiology and a lack of clinical experience can lead people to imagine that ether is perfectly safe, no matter in what manner or to what extent they use it. It is, of course, much easier to bring about death with chloroform than it is with ether. But I agree absolutely with Dr. Sykes that the chances of fatality are reversed if a good anæsthetist gives the chloroform and an inexperienced one the ether.

I am, Sir, yours faithfully,

London, Feb. 15th, 1927. J. BLOMFIELD.

PULMONARY EMBOLISM FOLLOWING OPERATION.

To the Editor of THE LANCET.

SIR,—The favourable comments on my paper on Post-Operative Embolism which appeared in your issue of Jan. 15th are gratifying, but I should like to comment on some of the questions raised by your correspondents.

Mr. Lockhart-Mummery suggests that a tight binder round the abdomen is a factor of importance in producing venous stasis by hampering the excursions of the abdominal wall. I submit that venous circulation in the abdomen depends not on excursions of its wall, but on an alternating rise and fall of intra-abdominal pressure. Surely this is most easily obtained by fixing the abdominal wall and contracting and relaxing the diaphragm. The difficulty seems to be not that binders are too tight, but that, however they are applied they cannot adequately support an incision against a rise of intra-abdominal pressure. I am glad to see that Mr. T. B. Davies agrees with me on this point.

By laying stress on stasis in my paper I did not mean to imply that this was the only factor in the production of thrombosis, but simply that it predisposed to it. The nature of the second factor remains to be determined. Mr. Lockhart-Mummery suggests that it is thrombokinase, but from the last paragraph of his letter I doubt that he is entirely satisfied that he has a complete answer to the question. If the figures in the paper are accepted, and he is prepared to accept them on the subject of sepsis, any theory as to the nature of the second factor must explain three facts: 1. That massive embolism is quite as common in medical as in surgical cases. 2. That the liability to embolism increases with age. 3. That in any given condition only a very small proportion of cases contracts this complication.

Personally I know of no theory that covers these facts, but I suspect that the explanation lies in some unknown quality of the blood, more common in old people, rendering it more liable to clot than it normally is; the very antithesis, in fact, of the equally unknown quality present in hæmophilia. Dr. Des Vœux and Dr. Owen appear to hold very much the same opinion.

Dr. Owen suggests that this underlying condition may be influenced by influenza and that cases of embolism are more common when this disease is prevalent. I can only say that no indication of this is to be derived from the annual figures in my series of cases. There is no significant variation in any particular year nor is there proof that embolism is becoming more frequent. Again, without a post-mortem one cannot be sure that hæmoptysis in a case of influenza is due to embolism as it is a well-recognised feature of influenzal broncho-pneumonia.

I believe that a study of the coagulation of the blood in a large series of elderly surgical patients before operation is performed, and trying to detect a difference between those that develop embolism and those that do not, is the most hopeful line of investigation for the future. I am, Sir, yours faithfully,

Plymouth, Feb. 15th, 1927. W. A. LISTER.

TREATMENT OF INFLUENZA.

To the Editor of THE LANCET.

SIR,—I am prompted to write this by the letter of "X" in your issue of Jan. 15th, entitled Influenza and Some Gloomy Reflections. Several years ago in private practice I worked out a formula which did exceedingly good service in the epidemic of 1918.

The remedy consists of a capsule containing quinine hydrochloride, camphora monobromata, hexamethyleneamine, of each two grains, methylene-blue one grain. These drugs are well mixed and pounded up together and the capsules filled in this proportion. Smaller doses are of course used for children. One capsule is given at the onset, followed if necessary in four hours by a second. Not more than four should be used in 24 hours, and most of my cases have not required more than three in all, used two in the first 24 hours and one in the second. Needless to say the drugs should be given as soon as possible after the onset, and no coal-tar derivatives, salicylic acid products, or other heart depressants should be used. Rest in bed, elimination—laxatives and lots of hot tea, freshly made with cream and sugar added, are of course indicated.

It is with considerable appreciation of my temerity that I present this formula as I have no series of any thousand cases at the back of it, but merely a possible fifth of this number spread over a number of years, for the reason that after the war I remained in Government service, which, as you know, requires a man to do what is needed to be done, and not that which he desires to do.

I am, Sir, yours faithfully,

JULIUS H. HURST.

2802, Wisconsin-avenue, N.W., Washington, D.C., Feb. 4th, 1927.

THE NEW ROYAL EAR HOSPITAL.—On Feb. 9th Mr. Neville Chamberlain (Minister of Health) opened the Royal Ear Hospital (Duveen Memorial), which now forms part of University College Hospital. In welcoming Mr. Chamberlain, Mr. Geoffrey Duveen, the donor, said that it was hoped that the hospital would be a place where the latest knowledge would be available for practitioners and students who had hitherto been obliged to seek it abroad. Mr. Chamberlain said that in one year there were more than 50,000 children, or 1 in every 100 children attending school, who were to some extent suffering from defects which required diagnosis and treatment in such a hospital. The new hospital is situated in Huntley-street, in close proximity to the main building of University College Hospital, with which it is connected by a subway. The staff includes Mr. Herbert Tilley, Mr. G. Seccombe Hett, Mr. Richard Lake, Dr. E. A. Peters, Mr. H. A. Kisch, and Mr. J. F. O'Malley. There is accommodation for about 40 in-patients, including private wards for patients of moderate means.

Obituary.

DOUGLAS DOUGLAS-CRAWFORD, M.B., C.M. EDIN., F.R.C.S. ENG.

AT the age of 60 Mr. Douglas-Crawford died suddenly at Liverpool on Feb. 7th. An active man, he had just been granted an extension of his term of office as senior surgeon to the Royal Southern Hospital, and the medical profession in Liverpool will greatly regret his unexpected death. He was born and brought up in Liverpool, being the son of a doctor who practised there, but he received his medical training in Edinburgh. After graduating in 1887 he became a Fellow of the Royal College of Surgeons of England in 1894, meantime spending useful years in study at Dundee, where he was demonstrator in anatomy, and at Berlin, Vienna, and University College, London. Thus equipped he came back to Liverpool and started work as a general practitioner, but almost at once devoted his attention to purely surgical work, and was soon elected to the staff of the Stanley Hospital. In 1910 he became full surgeon to the Royal Southern Hospital and for nearly three years before his death he was the senior member of its surgical staff. Much of his energy was, however, given at one time and another to the Liverpool Dental Hospital and to teaching in the University, in which for many years he was ex-officio lecturer in clinical surgery. His instruction made a special appeal to dental students amongst whom his reputation was great. He also took an active part in the deliberations of the Faculty of Medicine, where his service on committees and his administrative tact were of great assistance. Engaged as he was in a busy practice and in work outside it, Mr. Douglas-Crawford did not find time to do much medical writing, but he contributed a number of articles to Liverpool journals on chronic prostatitis, on the mechanism by which volvulus is produced, and on other subjects. In his own city, however, he is not remembered so much for this side of his activities as for his cheery, breezy personality. He often helped his students when they needed help, and he put the interests of his patients before his own.

The Council of the University have passed a resolution recognising with gratitude the valuable services which he rendered during 33 years of association with the medical school. Memorial services were held at the Royal Southern Hospital and at the Cathedral, and the funeral on Feb. 10th was attended by several hundred mourners. Mr. Douglas-Crawford leaves a widow, but no family.

FRANCES ELIZABETH HOGGAN, M.D. ZÜRICH, M.R.C.P. IREL.

THE death of Mrs. Frances Hoggan, née Morgan, on Feb. 9th removes a pioneer among medical women, for Mrs. Hoggan was born in 1843 and qualified M.D. Zürich in 1870, six years before the passing of the Medical Qualifications Act, which threw open the medical profession in England to women. She studied also in Prague and Vienna and in 1877 became licentiate and licentiate in midwifery of the King's and Queen's College of Physicians of Ireland in 1877, gaining Membership of the College in 1880. Mrs. Hoggan was the third medical woman to practise in London, her predecessors being Miss E. Blackwell and Mrs. Elizabeth Garrett Anderson, and was physician with Mrs. Garrett Anderson to the first hospital in London to be officered by women. This hospital began in Crawford-street as St. Mary's Dispensary in 1866 and in 1872 developed into the New Hospital for Women with ten beds. Most of Mrs. Hoggan's contributions to medical literature were made in the 'seventies, and included papers in the scientific journals of Italy, France, and Germany. She wrote on the pathology and therapeutics of membranous dysmenorrhœa in the *Archiv für Gynäcol.* in 1876 and several neurological articles, her

graduation thesis being on progressive muscular atrophy. She married shortly after qualification. Owing to the ill-health of her husband, also a doctor, they lived in the south of France till his death in 1900, when Mrs. Hoggan returned to London. Shortly after this she visited America where she became interested in the colour question, and later explored the conditions in native villages in South Africa. For the last five years of her life she resided in Brighton where she was to be seen almost daily walking along the front. Her health had been failing for the last three months, until when she was very active in body and mind and deeply interested in all matters connected with her profession.

The Services.

ROYAL ARMY MEDICAL CORPS.

THE undermentioned are secd.: Lts. F. McL. Richardson, J. W. Eames, and W. R. C. Spicer.

The undermentioned to be Lts. on prob.: F. McL. Richardson, G. Anderton, E. H. Hall, R. T. P. Tweedy, and A. Sachs. Temp. Lts. G. A. Walmsley and R. A. M. Humphrey relinquish their temp. rank of Lt. Lt. J. W. Eames (from R.A.M.C., T.A.), T. E. Moles, and W. R. C. Spicer.

Lt. (on prob.) A. K. J. Finch is confirmed in his rank.

ARMY DENTAL CORPS.

Capt. D. Clewer to be Maj.

MILITIA.

Maj. T. Hampson relinquishes his commn. and retains the rank of Maj.

TERRITORIAL ARMY.

Lt.-Col. A. G. Hay, having attained the age limit, is ret. and retains his ranks with permission to wear the prescribed uniform.

Maj. G. A. C. Shipman, having attained the age limit, is ret. and retains his rank with permission to wear the prescribed uniform.

Capt. H. Wilson to be Maj.

Lt. K. J. Franklin resigns his commn.

Lt. G. E. Lindsay to be Capt.

Lt. G. C. Kelly, from Gen. List, T.A. (Aberdeen Univ. Contgt. (Infy. Unit), Sen. Div., O.T.C.), to be Lt.

INDIAN MEDICAL SERVICE.

Col. A. A. Gibbs to be Maj.-Genl.

ROYAL AIR FORCE.

Flying Officer G. J. Griffiths is promoted to the rank of Flight Lt.

CANADIAN ARMY MEDICAL CORPS AWARDS.

The following recommendations for awards to certain Canadian Army Officers in respect of services rendered during the war of 1914–19 having recently been put forward by the Government of the French Republic, H.M. the King has given unrestricted permission in all cases to wear the medals in question. Médaille D'Honneur des Epidémies, en Vermeil: Maj. Gustav Archambault and Capts. Leonidas Bergevin Blagdon, Real Dumont, Adrien Larose, and Gabriel Lefebvre. En Argent: Capt. Alphonse Joseph Lefleur.

MANCHESTER ROYAL INFIRMARY.—It has been decided that two women and two representatives of the working classes shall be appointed to the board of management.

MEMORIAL TO MR. HAMILTON DRUMMOND.—On Feb. 7th a meeting of the subscribers to this memorial was held at the Royal Victoria Infirmary, Newcastle, and it was decided that a bronze medallion portrait should be erected in the infirmary at a cost of not more than £100, and that a scholarship in clinical surgery should be established with the interest on the remainder of the sum subscribed. It was stated that £886 had so far been collected, besides £243 contributed towards the special Yeomanry account, and the fund will probably close at £1200. Subscriptions have been limited to five guineas. Mr. Philip E. Noble, Dr. R. P. Ranken Lyle, and Mr. G. Grey Turner were appointed trustees of the Hamilton Drummond Memorial Fund.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council held on Feb. 10th, Sir Berkeley Moynihan, the President, in the chair, Mr. V. Warren Low, as executor, presented two silver cups bequeathed to the College by the late Mr. Herbert William Page, in happy remembrance of his connexion with the College as a member of the Council and of the Court of Examiners. The President stated that an election of three Fellows into the Council would take place on Thursday, July 7th, at 10.30 A.M., in the vacancies occasioned by the retirement in rotation of Sir John Bland-Sutton, Sir Cuthbert Wallace, and Mr. W. Thelwall Thomas.

UNIVERSITY OF BRISTOL.—At recent examinations the following candidates were approved:—

FINAL EXAMINATION FOR M.B., CH.B.

Part II.—Winifred P. Brinckman, Juan M. Camps-Campins, Alan M. Critchley, •Thomas F. Hewer, Frederic W. T. Hughes, †Reginald Jackson, and Edgar R. Wide.

• With distinction in Pathology.

† With distinction in Forensic Medicine and Toxicology.

Group I.—Helen M. Aldwinckle.

Part I. (including Forensic Medicine and Toxicology).—‡ Trevor H. Berrill, Bernard J. Boulton, Terence A. Brand, ‖Ronald M. Norman, Eric Southam, ‡Thomas B. Wansbrough, and Arthur R. Williams.

‡ Distinction in Materia Medica, Pharmacy, Pharmacology, and Therapeutics.

‖ Distinction in Materia Medica, Pharmacy, Pharmacology and Therapeutics, and Pathology.

Part I. only.—Godfrey D. J. Ball, Owen J. P. Bollon, Thomas L. Cleave, Ronald D. Jenkins, Helen B. Murgogi, and Ethel M. Redman.

UNIVERSITY OF BIRMINGHAM.—The Council and Senate on Feb. 2nd granted permission to licentiates in dental surgery to wear a special gown.

HARVEIAN SOCIETY.—At the Paddington Town Hall on Thursday, March 10th, at 8.30 P.M., Sir Berkeley Moynihan will deliver the Harveian Lecture. His subject will be Diverticula of the Alimentary Canal.

OXFORD OPHTHALMOLOGICAL CONGRESS.—The seventeenth annual conference will assemble at Keble College, Oxford, on the evening of Wednesday, July 6th, and meetings will be held on July 7th, 8th, and 9th. A discussion on the Results of the Operative Treatment of Glaucoma will be opened by Dr. William H. Wilmer, ophthalmologist-in-chief to the Johns Hopkins Hospital, Baltimore, and the Doyne Memorial Lecture will be delivered by Prof. K. K. K. Lundsgaard, of Copenhagen, his subject being the Pneumococcus in connexion with Ophthalmology. Those who desire to contribute either papers or demonstrations should notify the hon. secretary, Mr. Bernard Cridland, Salisbury House, Wolverhampton.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Dr. G. A. Sutherland will lecture for the Fellowship on Thursday, Feb. 24th, on Fits and Faints. The lecture will be delivered at 5 P.M. at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., and all members of the medical profession are invited to attend. On Feb. 23rd, at 5 P.M., at the Royal Westminster Ophthalmic Hospital, Mr. C. L. Gimblett will give a lecture on Affections of the Cornea. This lecture will also be free. Dr. Andrew Wylie will give a special demonstration at the Central London Throat, Nose and Ear Hospital on Feb. 24th at 2 P.M.; members of the profession who wish to attend should notify the hospital secretary (Museum 1539). Beginning on March 7th the Brompton Hospital will hold a week's course, including demonstrations in artificial pneumothorax, X rays, the use of the electrocardiograph. The Chelsea Hospital for Women will hold a course from March 14th to 25th, and the Royal National Orthopædic Hospital will hold one from March 21st to April 2nd. During the same fortnight there will be a late afternoon course, primarily for general practitioners, at the London Temperance Hospital. From March 28th to April 9th the Queen's Hospital for Children will hold an all-day course, and from the same date, for two weeks, there will be a series of demonstrations at the Royal Eye Hospital on the Diagnosis and Treatment of Diseases of the Eye. The Fellowship arranges practical courses in anæsthetics and also courses in obstetrics. Arrangements can be made for clinical assistants in gynæcology. Copies of all syllabuses and of the *Post-Graduate Medical Journal* are obtainable from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

Mr. H. Edgar Smithers announces that he is compiling a directory entitled "Who's Who in the Nursing World." Further information may be had from him at 139, High Holborn, London, W.C. 1.

THE Cambridge University Press will publish early next month a book by Dr. Bernard Hart entitled "Psychopathology: Its Development and its Place in Medicine." Most of this book is taken up by the Goulstonian Lectures delivered before the Royal College of Physicians in 1926. (THE LANCET, 1926, i., 585 and 700.) Dr. Hart describes the development of psychopathology and critically reviews the chief tenets of the various schools.

MEDICO-LEGAL SOCIETY.—An ordinary meeting of this society will be held at 11, Chandos-street, Cavendish-square, London, W. 1, on Thursday, Feb. 24th, at 8.30 P.M., when a paper will be read by Dr. F. J. McCann on Some Cases of Medico-legal Interest in the Practice of Gynæcology. A discussion will follow. Members may introduce guests on production of a member's private card.

ROYAL SANITARY INSTITUTE.—The Henry Saxon Snell Prize will in 1927 consist of 50 guineas and the medal of the institute, and is offered for an essay on Sanitary Accommodation, Appliances and Fittings, for Hotels and Flats, with suggestions as to proper placing, arrangement, ventilation and lighting, particularly where there are no external walls in which windows can be placed. Details may be had from the Secretary of the institute, 90, Buckingham Palace-road, London, S.W.1.

ASSOCIATION OF SPECIAL LIBRARIES AND INFORMATION BUREAUX.—At a meeting to be held at the Royal Institute of British Architects on Feb. 23rd Mr. G. ?. Barwick will speak on the compilation of a directory of sources of specialised information which has been going on under his direction for eight months. Cards of invitation can be had from the Secretary of the Association, 38, Bloomsbury-square, London, W.C. 1.

LIVERPOOL POST-GRADUATE COURSE IN CARDIOLOGY. A special two weeks' post-graduate course will be given at the Liverpool and District Hospital for Diseases of the Heart from March 7th. Early application should be sent to Prof. J. M. Beattie at the hospital, entry being limited to 20.

RETIREMENT OF IRISH MEDICAL OFFICIAL.—The retirement is announced of Dr. C. J. MacCormack, who has been for many years medical member of the General Prisons Board of Ireland and Inspector of Reformatory and Industrial Schools. Before his appointment to the Prisons Board Dr. MacCormack was for some years a medical inspector of the Local Government Board; he had previously practised in Athlone. His colleagues and the office staff of the Prisons Board met last week to make him a presentation on his retirement.

STERILISATION OF DEFECTIVES.—The Surrey County Council recently appointed a subcommittee to consider a resolution passed by the Worcestershire County Council urging the Government to take compulsory measures for preventing the spread of mental deficiency, by sterilisation, by compulsory segregation, or by other measures. The subcommittee has reported that the weight of available evidence is to the effect that, apart from certain cases due to acquired injury or disease of the brain, heredity is probably the biggest factor in the causation of mental defect; but although the defect often occurs in the child of a defective parent, a defective is more often the child of a parent who has transmitted an ancestral strain of tainted stock without personal signs of mental abnormality. An analysis of family histories of 500 recent consecutive cases in Surrey shows that in only 25 per cent. was one parent in any way abnormal mentally, and in four cases only—i.e., 0·08 per cent.—were both parents defective (some of these, perhaps, not being certifiable under the Act). It would appear that if every defective now existing were to be sterilised, says the subcommittee's report, the result a generation hence would be insignificant. "It is generally recognised," the report goes on, "that sterilisation does not materially affect moral propensities which have already been acquired, and a sense of security might even lead to increased dissemination of venereal disease. It is important to remember that cases which are subject to be dealt with under the Act mostly require segregation (which would equally prevent procreation) because of failure to be self-supporting or some other antisocial factor which would not be remedied by sterilisation, and institutional training and care would still be required for such cases." The Surrey County Council, having received this report, has decided not to ask the Government to promote legislation for the sterilisation of defectives.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN.—The out-patient department of this hospital is described as "deplorable, cramped, and dilapidated," and a new one will cost £65,000, towards which King Edward's Fund has promised £3250.

DINNER TO DR. LILY BAKER.—A dinner has been given at Bristol to celebrate the appointment of Miss Lily Baker to the honorary staff of Bristol Royal Infirmary. Except at the Royal Free Hospital this is the first time that a medical woman has been made a member of the full staff of a general teaching hospital in the British Isles. Dr. Baker is in charge of the antenatal department.

FIRST-AID AND THE WIRELESS.—The Dublin Broadcasting Station has included in its programme in recent weeks a series of lectures on first-aid and ambulance work. An inaugural lecture, describing the work of the St. John Ambulance Brigade, was delivered by Sir John Lumsden, M.D., Commissioner for Ireland, and has been followed week by week by lectures from other teachers. Each lecture lasts 15 minutes.

ST. ANDREW'S HOSPITAL, DOLLIS HILL.—It is stated that the want of accommodation at this hospital has become a serious problem, and that £30,000 is required at once for the provision of additional beds, the opening of a children's ward, and a home for the nurses and staff. The sum of £4600 has so far been contributed. The hospital was opened in 1913 for the professional and middle classes, and although contributions are asked from patients who can afford it, no patient has been refused solely on the ground that he could not pay a fee.

LONDON ASSOCIATION OF MEDICAL WOMEN.—At a meeting held on Jan. 25th, the President, Miss Elizabeth Bolton, in the chair, Dr. Margaret Dobbie-Bateman gave an address on Some Aspects of Industrial Medicine. She discussed industrial medicine chiefly as it applied a particular organisation of medical practice to meet a particular social service. Factory medical officers, she pointed out, must be distinguished from certifying surgeons. The latter were invested with certain statutory powers and were required to fulfil certain statutory duties, whereas the factory medical officers were the officials of the industrial organisations in which they worked, their powers being purely advisory. Their business, from the staff managerial point of view, was (1) to prevent the engagement of people unable by reason of physical disability to do the work required of them; (2) to prevent absence of workers and, therefore, loss of work—through sickness; and (3) to prevent loss of work through lowered physical efficiency of employees at work. Restated from the point of view of the workers—and on this restatement Dr. Dobbie-Bateman laid great stress—the medical officer's duty was to restrain people from undertaking work they were unable to do and to keep them in a full and happy capacity at work. The first aim was met by a preliminary medical examination of candidates for employment. Between those completely fit and those totally unfit was a large class whose applications had to be considered. Standards of fitness for employment in industry need not be as rigid as standards for acceptance in the army. It was a pity that anyone should be excluded from helping to produce if he was likely to be able to do so. It was often possible to allocate suitable work to a candidate who would not be capable of work in certain departments, or to recommend treatment after which the candidate became fit for any work. A knowledge of the industrial processes was, therefore, necessary to the medical officer. Unfortunately, certain people still had an objection to a compulsory medical examination, and Dr. Dobbie-Bateman was now trying the experiment of a voluntary medical examination for applicants over the age of 16, though for younger people she was convinced that compulsory examination was necessary in their own interests. For the prevention of absenteeism it was essential (1) to examine the staff returning from sick leave, if possible before they rejoined their departments, and (2) to rule that the only pass-out given to workers leaving their posts for reasons of health should be given by the medical officer. The first rule prevented people from returning to work before they were fit, whilst the knowledge that a visit had to be paid to a medical officer acted as a deterrent to those whose headaches tended to occur on the Tuesday after Bank Holiday. The industrial medical officer was also called on for first aid, for advice as to lighting, heating, and ventilation, for the determination of optimum periods of rest, and for the superintendence of canteen arrangements. There was urgent need of a dental scheme in connexion with industrial medicine and an ophthalmological service would also be of value. Finally, research into industrial dermatitis and industrial fatigue should be actively pursued.

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL.—Mr. and Mrs. F. Kroyer Kielberg have given Athelstone, their residence at Noctorum, as a convalescent home in connexion with this institution, together with a sum of money for adaptation. The home will hold from 30 to 35 children.

SKIMMED MILK.—The Liverpool Health Committee has asked the medical officer of health and the city analyst to report on condensed skimmed milk imported from the United States. It is not allowed to be sold in the United States, but export is allowed to this country. The tins bear the notice "Not fit for babies." There is, it was stated, a danger that some mothers, for the sake of cheapness, will give it to their children.

THE LATE DR. C. J. HARRISON.—The death of Dr. Charles Joseph Harrison, of Chelsea, occurred on Feb. 7th after a rapid illness due to influenza. Dr. Harrison studied medicine at University College and graduated M.B. Lond. in 1892, proceeding to the M.D. degree two years later. After holding the post of house surgeon at the Victoria Hospital for Children he settled in Chelsea, where he had been in practice for 33 years at the time of his death. During the war he acted as surgeon to the Fulham Military Hospital.

INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY. The President of the year (Dr. Gustave Monod) and Council are inviting members and their friends to a conversazione at the rooms of the Medical Society of London on Thursday, March 30th, 8.45 to 11 P.M. Representatives from France, Germany, Italy, Holland, Belgium, and Czecho-Slovakia have accepted invitations. A film showing the annual meeting of the society in Czecho-Slovakia last year will be exhibited and a demonstration will be given of the life-history of silica, showing the effects of hydration and dehydration, and the birth, life, and death of the opal. The director of the Wellcome Medical and Historical Museum is lending exhibits to illustrate the history of medical hydrology. Members of the medical profession who would like to attend are invited to communicate with Miss Fox, I.S.M.H., 139, Marylebone-road, N.W. 1.

HUNTERIAN SOCIETY.—The Hunterian Oration will be delivered at the Cutlers' Hall, Warwick-lane, London, at 9 P.M. on Monday, Feb. 28th, by Mr. W. Girling Ball, on The Value of Modern Methods of Investigation in the Diagnosis and Treatment of Hæmaturia.—The annual dinner was held on Feb. 10th at the Hotel Victoria. The President, Mr. A. E. Mortimer Woolf, took the chair and about 250 Fellows and guests were present, including the Lord Chief Justice and the Lord Mayor and Lady Mayoress of London. The toast of The Hunterian Society was proposed by the Lord Chief Justice, and the President briefly and wittily responded. Mr. J. E. H. Roberts proposed The Guests, the reply being divided between Sir Francis Newbolt (England), Mr. Hugh Edwards, M.P. (Wales), and Dr. H. C. Cameron (Scotland). The musical part of the programme was given by Mrs. Westerman and Mr. J. Batten. The proceedings ended with a hearty vote of thanks to the two honorary secretaries.

R.A.M.C. SCHOLARSHIPS AT CHELTENHAM COLLEGE. Six years ago the Aldershot R.A.M.C. Fund Committee endowed four scholarships, one to be competed for annually at Cheltenham College. The Foundation is for the benefit of the sons of all officers of the R.A.M.C. The first two scholars who entered Cheltenham under this scheme have just left, having taken fifth and sixth places respectively on the Woolwich and Sandhurst lists of December last. Both boys have been awarded prize cadetships into those institutions on account of their high positions on the lists. It is not generally known that the sons of all medical officers—Regular, Special Reserve, Territorial, and Temporary—who died of wounds or disease during the Great War are primarily eligible to compete for these scholarships, and that in default of candidates under this category, the sons of all living medical officers serving or retired come within the scope of this Foundation. In the event of any boy falling short of scholarship standard money grants are sanctioned in suitable cases, and there are several boys receiving these benefits at the College now. The value of the scholarships is approximately £50 per annum, tenable for four to five years, a purely classical or modern education being given at the desire of the parents or guardians.

Messrs. Kelvin, Bottomley, and Baird, who manufacture the K.B.B. apparatus for ultra-violet light therapy, have opened new showrooms at Imperial House, Regent-street, London, W. 1.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Poor-law Consolidation.

IN the House of Lords, on Wednesday, Feb. 9th, a Government measure consolidating enactments relating to the relief of the poor was introduced and read a first time.

New Bills.

In the House of Lords on Tuesday, Feb. 15th, Viscount ASTOR presented the Education (Employment of Children and Young Persons) Bill, and the Bastardy Bill, both of which were read a first time.

Private Members' Bills.

Among the Bills presented by private Members in the House of Commons on Friday, Feb. 11th, were the following:—

Mr. WOOD: To amend certain enactments relating to mental defectives.—Mr. RUSSELL: To secure the registration of optical practitioners and to regulate the practice of sight-testing and for purposes incidental thereto.—Mr. TINKER: To consolidate with amendments the enactments relating to factories and for purposes connected therewith.—Mrs. PHILIPSON: To provide for the registration and inspection of nursing homes and for purposes connected therewith.—Mr. BARCLAY-HARVEY: To amend the Midwives (Scotland) Act, 1915, and to provide for the registration and inspection of maternity homes and for purposes connected therewith.—Sir H. LUCAS-TOOTH: To extend maternity benefits in cases of miscarriage and for purposes connected therewith.

Vivisection of Dogs.

In the House of Commons on Monday, Feb. 14th, Sir R. GOWER presented a Bill to prohibit the vivisection of dogs.

Workmen's Compensation.

On the same date Mr. F. HALL presented a Bill to amend the law relating to workmen's compensation.

HOUSE OF COMMONS.

THURSDAY, FEB. 10TH.

Government and Spahlinger Treatment.

Sir CHARLES CAYZER asked the Minister of Health whether his department was at present in communication with Mr. Spahlinger in regard to his treatment; and, if so, whether he would state the present position of any such negotiations.—Mr. N. CHAMBERLAIN replied: I am not, at present, in communication with Mr. Spahlinger, but it has been publicly stated on my behalf that the offer made to him to arrange for a scientific investigation in this country of his method of treatment as soon as the necessary materials are forthcoming, is still open.

Approved Societies and Dental Fees.

Sir THOMAS DAVIES asked the Minister of Health whether he was aware that the majority of approved societies, embracing over 90 per cent. of the population entitled to dental benefit under the National Health Insurance Act, had accepted the new scale of fees for dental service under that Act, which scale was negotiated and agreed between representative men in approved society organisations and representative men in dental professional organisations; and whether, in these circumstances, he would take such steps as might be necessary to secure that insured persons who were members of the few approved societies whose officials were opposing such agreed scale should not be deprived of dental benefit through a refusal by such officials to consider estimates based by dentists upon such scale or through inability on the part of the member to find a dentist willing to do work at lower fees than those so agreed.—Mr. N. CHAMBERLAIN replied: The position with regard to the new scale of fees for dental service is as stated by the hon. Member. As regards the latter part of the question, I could not regard it as satisfactory that any approved society which has included dental benefit in its scheme of additional benefits should make such arrangements as resulted in its insured members being unable to obtain satisfactory dental treatment with reasonable freedom of choice of dentist, and I shall not hesitate to take the necessary steps to deal with any such case that may be brought to my notice.

Housing Statistics.

Mr. HANNON asked the Minister of Health whether he had statistics available showing the number of houses erected under the Housing Acts in the years 1924, 1925,

and 1926; and also the numbers which had been erected in the same years without subsidy.—Mr. N. CHAMBERLAIN replied: The following table gives the information desired by the hon. Member:—

Year.	Number of houses erected—		
	With subsidy under the Housing Acts during the year ended in—		Without subsidy during the year ended in September.
	December.	September.	
1924	52,730	36,459	73,032
1925	99,497	92,291	66,735
1926	144,619	131,895	65,689

Condemned Houses.

Mr. ALBERY asked the Minister of Health how many condemned houses in England, Scotland, and Wales were occupied in December, 1924, and in December, 1926.—Mr. N. CHAMBERLAIN replied: Statistics are not available for England and Wales giving the information desired by the hon. Member. According to the annual reports of medical officers of health 12,722 houses were reported during the year 1924 as unfit for human habitation. Similar information for 1926 is not yet available. As regards Scotland I would suggest that a similar question should be addressed to the Secretary of State.

Cost of Pauper Lunatics.

Mr. DENNISON asked the Minister of Health the average weekly cost per head of a pauper lunatic and an indoor pauper for the last two complete years ending March 31st.—Mr. N. CHAMBERLAIN replied: It is estimated that, excluding the cost of buildings and loan charges, which on the average may be put at between 6*s.* and 7*s.* per week, the average weekly cost per head of persons maintained in institutions for lunatics at the cost of the guardians was, for the year ended March 31st, 1924, 22*s.* 2¾*d.*, and, for the year ended March 31st, 1925, 21*s.* 3¼*d.* The average weekly cost of a person maintained in a Poor-law institution in England and Wales, including the cost of buildings and loan charges, was 25*s.* 5*d.* for the year 1923–24, and 27*s.* 1¼*d.* for the year 1924–25.

The Purity of Imported Milk.

Lieut.-Col. ACLAND-TROYTE asked the Minister of Health what steps he was taking to ensure that milk imported from foreign countries was produced under conditions as good as those laid down in the Milk and Dairies Order; and how he proposed to protect the public against imported milk which was not produced under proper conditions.—Mr. CHAMBERLAIN replied: The Public Health (Imported Milk) Regulations, which I made at the same time as the Milk and Dairies Order, require all milk imported from foreign countries to be in such a condition that on a sample being taken it shall be found to contain not more than 100,000 bacteria per cubic centimetre and to be free from tubercle bacilli. The Regulations are enforced by means of a requirement that an importer must be registered with the port or riparian sanitary authority and may be struck off the register if he imports milk which does not comply with the provisions of the Regulations. I may perhaps add that the amount of milk which is imported into England and Wales is practically negligible.

Pensioners and Reopening of War Wounds.

Mr. ROBINSON asked the Minister of Pensions if he would take the necessary action to enable men who were suffering from wounds inflicted in the great war to claim pension should the wound break down or reopen after the expiry of seven years from the termination of active service in the war.—Major TRYON replied: I would refer the hon. Member to the reply which I gave on Feb. 11th, 1926, in which I stated that in the case of an old wound which has broken down more than seven years after discharge, and required surgical treatment, I had issued instructions that immediate steps should be taken to provide such treatment. The experience of the past year shows that such cases are, for the most part, restored by treatment, but if in any such case the man is found after treatment to be seriously incapacitated consideration is given to the making of an appropriate grant.

Rehousing of Tenants of Condemned Houses.

Mr. ALBERY asked the Minister of Health if he would impress on local authorities the desirability of utilising the 1924 Building Act primarily to rehouse those living in condemned houses; and if he was aware that this was not being generally done.—Mr. CHAMBERLAIN replied: I have already, in a circular recently issued to local authorities, urged them to devote themselves specially to the provision of the type of houses capable of being let at rents within the means of the less well-paid workers. I do not think it is practicable for local authorities in letting new houses to limit themselves in the first instance to the class to which my hon. friend refers, but I believe it is the general practice to give weight to the claims of those living in condemned houses.

FRIDAY, FEB. 11TH.

Rating Reform.

Mr. FENBY, on behalf of the Liberal Party, moved the following amendment to the Address in reply to the Gracious Speech from the Throne:—

"But this House deplores that the Government do not propose to bring forward measures for the relief of the local rates, by which expenditure in many districts has risen to almost unbearable dimensions, and which now so impedes the revival of our industrial and agricultural prosperity; and for the reduction of rating on improvements by placing a fair share of the burden upon the monopoly values in the urban districts which have been created by these communities."

The burden of the rates was, he said, shown by the fact that while in 1900 the amount of rates per head of the population per annum was £1 6*s.* 11*d.*, it was £1 15*s.* 4*d.* in 1910, £1 19*s.* 6*d.* in 1915, £2 16*s.* 4*d.* in 1920, and £3 14*s.* 7½*d.* in 1924. He hoped that the Minister of Health would give the House a definite promise that he was prepared to frame legislation to deal with this pressing evil.

Mr. G. THORNE seconded the amendment.

Mr. NEVILLE CHAMBERLAIN (Minister of Health) said it was generally agreed that the burden of rates in the urban districts was increasing, and was weighing very heavily on industry, but he failed to see how that was going to be remedied by the amendment. What was really wanted in his view was a new arrangement of national and local taxation, one which would have the effect of spreading over the national area some part of the burden which was now directly concentrated unduly on local spots. There must be three stages if they were to deal with it on sound and permanent lines. Seeing that an essential feature was capacity to pay, the first necessity was that they should have some sort of uniformity of valuation throughout the country. The Government had taken the first step in passing the Rating and Valuation Act. The second step, he believed, was to be found in the concentration of financial control in any area in one authority. The reform of the Poor-law system under which this concentration took place and under which one authority would be able to keep under its own control and within its own purview the whole financial aspect of public expenditure in that area, was the second step. The third step to follow on, or it might even be to accompany it, would consist in the actual formula for the adjustment of the relations between national and local expenditure. It was possible, now that the announcement had been made of the Government's hopes to introduce a new measure of Poor-law reform in the autumn, to speak with greater precision on this matter than he had done previously. He did not say that it would be possible between now and the autumn to define the financial arrangements which would cover the whole field of service, and which would be satisfactory to all concerned. What he did say, however, was that they would spend the intervening time in exploring still further ideas to which they had already given prolonged consideration. They would consult the local authorities concerned on their proposals, and if and when they were able to produce a complete scheme he thought they would have advanced towards solving the problem of the necessitous areas which had troubled and baffled so many Governments in the past.

After further debate,

The amendment was defeated by 244 votes to 88—ma ority against, 156.

MONDAY, FEB. 14TH.

Medical Service in Gold Coast Colony.

Sir COOPER RAWSON asked the Secretary of State for the Colonies (1) from what date it was proposed to appoint a native doctor to succeed a European doctor at Dunkwa, Gold Coast Colony, where there were over 40 European residents, including women; and, seeing that the nearest European doctors to Dunkwa were at Sekondi and Kumasi, 6¼ and 4¼ hours away respectively, with only one train a day in each case, would he appoint a European doctor at Dunkwa; and (2) whether, seeing that a European doctor had been put in charge of a native hospital at Elmina, he would say why he or some other European doctor should not be appointed to Dunkwa.—Mr. AMERY replied: It is the policy of His Majesty's Government that natives of West Africa who are qualified medical men and otherwise suitable for public employment should be employed in the Government service in West Africa. Three African medical officers are employed in the Gold Coast out of a total medical staff of 67. My hon. friend will of course understand that it must rest with the Colonial Government to make the

best use of the staff at its disposal; and I cannot see my way to interfere with the Governor's exercise and his discretion in a matter of this kind.

Education of Physically Defective Children.

Major HILLS asked the President of the Board of Education what was being done by the Board for the education of children of school age who were suffering from more than one defect; what was the number of such children of the various types of double or triple defect in England and Wales; and, as these children were found in small numbers all over the country and were not numerous in any particular area, could any steps be taken for the formation of a joint committee of the local education authorities for large areas to provide suitable institutions for the instruction of such children.—The DUCHESS OF ATHOLL replied: This matter is receiving careful consideration. My right hon. friend has been furnished with certain particulars regarding the education and care of children of this type, but he is afraid that complete statistics are not available. In so far as the children are mentally defective they fall within the purview of the special committee which is now investigating the question of the provision which should be made for mentally defective children, and my right hon. friend is not at present in a position to make a statement on the subject.

Lead Poisoning in the Potteries.

Major HILLS asked the Home Secretary how many cases of lead poisoning in the potteries occurred in factories using low-solubility glazes since the regulations of 1913, which gave special exemption to such factories.—Sir W. JOYNSON-HICKS replied: During the 11 years 1916–26, there were 67 such cases out of a total of 351, but in 60 of these there had been previous employment, often for many years, in factories using raw lead glazes. I am glad to tell my hon. friend that the incidence of lead poisoning in potteries of this class is to be the subject of a special investigation by one of the medical inspectors, and the investigation will be proceeded with at an early date.

Public Expenditure on Medical Treatment.

Mr. ROBERT MORRISON asked the Minister of Health if he would state the expenditure for each year from 1923 upon provision and treatment for tuberculosis, maternity and child welfare, venereal disease, and welfare of the blind respectively.—Mr. CHAMBERLAIN replied: It is presumed that the question relates to expenditure out of moneys provided by Parliament. The amounts of such expenditure in England and Wales for the financial years 1923–24 to 1925–26 in respect of the services mentioned in the question were as follows:—

—	1923–24.	1924–25.	1925–26.
	£	£	£
Maternity and child welfare ..	791,000	814,000	897,000
Treatment of tuberculosis ..	1,337,000	1,430,000	1,547,000
Grants towards provision of sanatoria	87,000	15,000	19,000
Treatment of venereal diseases	303,000	298,000	307,000
Welfare of the blind	83,000	95,000	104,000

TUESDAY, FEB. 15TH.

Use of Poisons and Bacteria in War.

Mr. JAMES HUDSON asked the Prime Minister whether, in view of the recommendation of the League of Nations Disarmament Commission, that all subsidies, both to private and official laboratories promoting research in poison gases, be abolished, the British Government was prepared to give a lead in this matter, and whether the Government was prepared, in accordance with the further recommendation of the same commission, to introduce legislation forbidding any one, civilian or military, to perform exercises in the use of poisons and bacteria.—Mr. BALDWIN replied: Until such time as a definite assurance can be obtained that all Powers are willing to adopt measures of prohibition in regard to poisons and bacteria, His Majesty's Government must take steps to be in a position to defend itself against such attacks. In regard to the second part of the question, so long as our nationals might be exposed to attacks of this nature, it is the bounden duty of His Majesty's Government to take steps to provide protection for them.

Deaths from Tetanus in London Hospitals.

Mr. DAY asked the Minister of Health the number of persons who had died in London hospitals as the result of lockjaw following dog-bites during 12 months to the last convenient date.—Sir KINGSLEY WOOD replied: No deaths certified as due to tetanus following dog-bites took place in any London hospital during 1925. No subsequent figures are as yet available.

Grade A Milk Licences.

Mr. WELLS asked the Minister of Health if he would reconsider the charges at present made for licences, as set out in the Fourth Schedule of the Milk and Dairies Order, 1923, with a view to their reduction, and so assist those agriculturists desirous of providing the public with milk of Grade A quality.—Sir KINGSLEY WOOD replied: The charges made by local authorities for Grade A milk licences are designed to cover the cost of supervision and bacteriological examination, and, on the information at present before him, my right hon. friend does not consider that they could properly be reduced.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 5TH, 1927.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 547 (last week 532); scarlet fever, 1287; diphtheria, 988; enteric fever, 32; pneumonia, 3198 (last week 2618); puerperal fever, 36; puerperal pyrexia, 130; cerebro-spinal fever, 17; acute poliomyelitis, 13; acute polio-encephalitis, 3; encephalitis lethargica, 49; dysentery, 16; ophthalmia neonatorum, 131. There was no case of cholera, plague, or typhus fever notified during the week.

One case of small-pox was notified from Portsmouth C.B., one further case from Stockport C.B., and none from Essex. The remaining cases were distributed, as last week, amongst the following counties: Derbyshire 20, Durham 340, Lancashire 4, Northumberland 12, Nottinghamshire 1, Yorkshire 168.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 43 (1) from measles, 11 (5) from scarlet fever, 89 (26) from whooping-cough, 51 (12) from diphtheria, 42 (9) from diarrhœa and enteritis under 2 years, and 818 (215) from influenza. The figures in parentheses are those for London itself. The influenza deaths for the last six weeks have thus been 86, 173, 326, 470, 725, and 818, while 759 is the figure notified for the week ending Feb. 12th, the deaths in London being 159.

DONATIONS AND BEQUESTS.

UNDER the will of the late Mr. Robert Allison, J.P., of Paisley, subject to his wife's life interest, the testator left among other bequests, £2000 to the Orphan Homes of Scotland and Consumptive Sanatorium, Bridge of Weir; £1000 each to the Paisley Eye Infirmary, the Glasgow Eye Infirmary, the Royal Glasgow Asylum for the Blind, the Glasgow Deaf and Dumb Institution, the Glasgow Samaritan Hospital for Women, the Glasgow Cancer Hospital, the Royal Hospital for Sick Children; £500 each to the Paisley and District Mission to the Deaf and Dumb, the Glasgow Hospital and Dispensary for Diseases of the Ear, the Glasgow Hospital for Skin Diseases, the Mission to the Outdoor Blind for Glasgow and the West of Scotland, the West of Scotland Convalescent Homes, Dunoon, and the East Park Home for Infirm Children.—Mrs. Blanche Murray, of Manchester-square, W., and Taigmount, Stanley, Perth, left £5000 to the Perth Royal Infirmary, to endow a bed in memory of her husband, if not already given by her or her children.—The Royal Manchester Children's Hospital, Pendlebury, has received £1000 from the executors of the late Miss Mary Scott Monat to endow a cot, £350 from the Manchester Civic Week Executive Committee, and £170 from the sale of silver paper.—Mr. William Wright, Kirkcaldy, Fife, left besides other bequests £1000 to Kirkcaldy Hospital, and £500 each to several institutions including the Queen Victoria Nursing Association, Kirkcaldy.—Dr. Patrick John Smith Nicoll, M.D., J.P., of Stratford, London, E., left £5000 upon trust for the provision of a maternity home for the poor of Rhynic, Aberdeenshire, and district, £5000 (part of which for the endowment of a bed) to Queen Mary's Hospital for the East End.—Mr. Bernhard Baron has given £10,000 to the Royal Westminster Ophthalmic Hospital for the building fund.—Mrs. Annie Jane Raine Sandsend, near Whitby, late of Sunderland, left £2000 to the Greenbank Hospital, Darlington, for the endowment of two beds in memory of her husband and herself, and £1000 to the New Whitby War Memorial Hospital.—By will the late Mr.

Edward Clark, of Learmonth-terrace, Edinburgh, and Glenmuir, North Berwick, left, among other bequests, £10,000 to the Royal Infirmary, Edinburgh; £10,000 to such institution in London as the trustees may select; £5000 for Red Cross purposes; and £1000 to the Edinburgh Sick Children's Hospital.—Mr. Henry Savile Jowett, of Huddersfield, chartered surveyor, left £1000 to the Royal Halifax Infirmary for the endowment of a bed to be known as the "Savile Jowett Bed."—Mr. Sidney Paige Adams, of Brookesby, Newton Abbot, who left £213,339, besides many other bequests, left £2000 each to the Royal Deaf and Dumb School, Exeter, the West of England Institution for the Blind and the Royal Devon and Exeter Hospital.—Mr. James Whitehead, retired contractor of Oldham, left £5000 to the Oldham Infirmary to endow two beds, £2000 each to the Oldham Corporation and the Urban District Council of Marsden for food, clothing, and similar articles for the poor at Christmas time, £1000 each to the Blackpool Hospital in recognition of the many services rendered to his workmen, and the Oldham Lyceum, and one-sixth of the residue of his estate to Oldham Royal Infirmary.—Bequests in the will of Mr. Edwin Samson Moore, J.P., of York Lodge, Erdington, Birmingham, include £1250 each to Birmingham General Hospital, Jaffray Hospital, Birmingham, Queen's Hospital, Birmingham, Birmingham and Midland Skin and Urinary Hospital, Birmingham and Midland Hospital for Women, Birmingham Maternity Hospital, Birmingham and Midland Eye Hospital, and Birmingham and Midland Ear and Throat Hospital; £1000 each to Children's Hospital, Birmingham, Orthopædic and Spinal Hospital Birmingham, Taylor Memorial Hospital of Rest, Sparkhill, and Smedley Memorial Hospital, Matlock.—Miss Sarah Emily Frances Payne, of Parkside, Knightsbridge, S.W., left £1000 to the Children's Hospital, Carlton, Melbourne; £500 each to the Hospital for Sick Children, Great Ormond-street, the Queen's Fund, Melbourne, and six other charitable institutions.—Mr. William Birtwistle and Colonel Arthur Birtwistle have subscribed £2000 on behalf of five Blackburn and Darwen mills under their direction, to the appeal for funds to complete the Blackburn War Memorial Infirmary extension.—The late Mr. Walter Loraine Tapling, of Pucklechurch, Tadworth, Surrey, left among other bequests £1000 to the National Hospital, Queen-square, W.C.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Feb. 21st.—8.30 P.M., SOCIAL EVENING. Fellows, Members of Sections, and their friends will be received in the Library by the President and Lady Berry. 9.30 P.M., Mr. Percy Flemming will give an address entitled Topographical and Medical Notes on Harley Street (with illustrations).

TUESDAY.—5 P.M., MEDICINE. Discussion on Migraine. Opener: Dr. C. P. Symonds.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. *Paper:* Mr. G. P. Male: On Disease other than Tuberculosis Conveyable to Man by Milk.

THURSDAY.—8 P.M., UROLOGY. *Paper:* Mr. Henry Wade: The Treatment of Malignant Disease of the Bladder.

FRIDAY.—8.30 P.M., STUDY OF DISEASE IN CHILDREN and MEDICINE. Special joint discussion on the Antitoxin Treatment of Scarlet Fever. Openers: Dr. E. W. Goodall, Dr. R. A. O'Brien, and Dr. F. Foord Calger. 8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. *Paper:* Dr. N. Howard Mummery: The Organisation of an Industrial Clinic.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Feb. 21st.—9 P.M., Mr. Donald J. Armour: The Surgery of the Spinal Cord and Its Membranes. (First Lettsomian lecture.)

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, Feb. 25th.—8.30 P.M. Papers will be read by Capt. F. Doble and Dr. A. Cambell on Urethritis as seen through the Urethroscope, with demonstration of the instrument, and a discussion will follow.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, London, W.C.

WEDNESDAY, Feb. 23rd.—8 P.M., Ordinary meeting. Mr. Francis H. Carr (President of the Society of Chemical Industry): Insulin and Its Manufacture.

THE MEDICO-LEGAL SOCIETY.

THURSDAY, Feb. 24th.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.). Dr. F. J. McCann: Some Cases of Medico-Legal Interest in the Practice of Gynæcology, to be followed by a discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 21st, to SATURDAY, Feb. 26th.—FELLOWSHIP OF MEDICINE. Special lecture at the Medical Society, 11, Chandos-street, Cavendish-square, W., at 5 P.M., on Thurs., Dr. G. A. Sutherland: Fits and Faints. Open to all members of the medical profession without fee.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. Special clinical surgery demonstration on Feb. 24th, at 2 P.M., by Dr. Andrew Wylie. Open to all members of the medical profession without fee, but those wishing to attend are asked to notify the hospital secretary (Museum 1539).—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Charing Cross, W.C. Special lecture at 5 P.M. on Feb. 23rd, Mr. C. L. Gimblett: Affections of the Cornea.—LONDON LOCK HOSPITAL, Dean-street, W. Special course in Venereal Diseases. Clinical work daily and special lectures.—NATIONAL HOSPITAL, Queen-square, W.C. Special course in Neurology. Daily instruction and special lectures.—Further information from the Secretary.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Feb. 21st.—10 A.M., Surgical Clinic. 2 P.M., Medical Cases in the Wards. 2.30 P.M. to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 P.M. to 5 P.M., Medical, Surgical, Throat, Nose, and Ear Clinics. Operations.

WEDNESDAY.—2.30 P.M. to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinic. 2.30 P.M. to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 P.M. to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On MONDAY, Feb. 21st, and WEDNESDAY, Feb. 23rd, there will be special demonstrations of Medical Cases and Eye Cases by Dr. J. B. Alexander and Mr. N. B. B. Fleming respectively.

ROYAL NORTHERN HOSPITAL POST-GRADUATE INTENSIVE COURSE.

MONDAY, Feb. 21st.—2.15 P.M., Dr. W. R. Reynell: The Treatment of the Anxiety-Neuroses. 3.15 P.M., Mr. Kenneth M. Walker: The Treatment of Prostatic Obstruction.

TUESDAY.—2.15 P.M., Dr. J. W. McNee: Some Diseases of the Biliary Tract. 3.15 P.M., Mr. A. M. Zamora: Carcinoma of the Larynx.

WEDNESDAY.—2.15 P.M., Dr. H. C. Semon: Notes on the Diagnosis of Skin Diseases. 3.15 P.M., Mr. J. B. Hunter: The Surgery of the Chest.

THURSDAY.—2.15 P.M., Dr. Bruce Williamson: Drugs in Disease of the Heart. 3.15 P.M., Mr. C. S. Lane Roberts: On Obstructed Labour.

FRIDAY.—2.15 P.M., Mr. F. D. Saner: Cancer of Rectum. 3.15 P.M., Mr. C. L. Gimblett: Some Points of General Interest in Eye Diseases.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Feb. 21st.—10 A.M., Mr. MacDonald: Genito-Urinary Operations. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M., Dr. Ironside: Medical Out-patients.

TUESDAY.—10 A.M., Medical Registrar: Clinical Methods. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Department.

WEDNESDAY.—10 A.M., Dr. Owen: Medical Diseases of Children. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2.30 P.M., Mr. Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 4 P.M., Sir Henry Simson: Meddlesome Midwifery.

FRIDAY.—11 A.M., Dr. Pritchard: Modern Methods in Medicine. 2 P.M., Mr. Sinclair: Surgical Out-patients.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy.

Daily.—10 A.M. to 5 P.M., Operations, Medical, Surgical, Special, Out-patient Departments (Saturdays 10 A.M. to 1 P.M.).

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Feb. 24th.—4 P.M., Dr. Shires: X Ray Diagnosis.

ROYAL DENTAL HOSPITAL OF LONDON SCHOOL OF DENTAL SURGERY POST-GRADUATE LECTURES.

WEDNESDAY, Feb. 23rd.—5.30 P.M., Mr. S. A. Riddett: Some Lesions of the Soft Tissues of the Mouth in Children.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Feb. 22nd.—5 P.M., Dr. G. B. Dowling: Seborrhœa: Seborrhœic Dermatitis.

THURSDAY.—5 P.M., Dr. Haldin-Davis: Pruritus, Prurigo, Lichenification.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY (Incorporating the London Dermatological Society).

WEDNESDAY, Feb. 23rd.—4.15 P.M. (at St. John's Hospital, 49, Leicester-square, W.C. 2), Clinical cases will be shown and a paper will be read by Dr. Nicoll on Parasitic Worms in Affections of the Skin. Photographs taken at Leysin (by kind permission of Dr. Rollier) will also be shown.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Feb. 25th.—4 P.M., Mr. C. Gill-Carey: Bronchoscopy and Œsophagoscopy.

PEOPLE'S LEAGUE OF HEALTH. (Sims Woodhead Health Lectures.)

MONDAY, Feb. 21st.—6 P.M. (at the Medical Society of London, 11, Chandos-street, W.), Dr. F. Vincent Denne: Teeth.

ST. MARY'S HOSPITALS, MANCHESTER.

FRIDAY, Feb. 25th.—4.30 P.M., Post-graduate lecture. (at the Whitworth-street West Branch), Dr. C. P. Lapage: Poliomyelitis (Polioencephalitis) in Children.

ST. MARGARET'S HOSPITAL FOR WOMEN, Acomb-street, Whitworth Park, Manchester.

WEDNESDAY, Feb. 23rd.—4.15 P.M., Mr. A. C. Magian: Uterine Prolapse and Its Treatment—Operative and Non-operative.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, Feb. 25th.—3.30 P.M. (at the Royal Hospital), Mr. P. J. Hay: Ophthalmic Clinic.

Appointments.

FERGUSON, J. B., M.D. Edin., D.P.H., has been appointed Medical Superintendent of the Tuberculosis Division of the Government of Victoria, Australia.

HILL, K. R., M.D. Lond., D.O.M.S., Honorary Ophthalmic Surgeon to the Kent County Ophthalmic Hospital, Maidstone.

MITCHELL, H. A., M.B. Toronto, Pathologist to the Warrington Infirmary and Dispensary.

VERRALL, P. J., M.B., Ch.B. Camb., F.R.C.S. Eng., Orthopædic Surgeon to the Royal Free Hospital.

St. Thomas's Hospital: HOPE-GILL, C. W., M.B., B.Ch. Oxf., WILES, L. A. F., M.R.C.S., L.R.C.P., WILLIAMS, P. LLOYD, M.R.C.S., L.R.C.P. Lond., L.D.S., MARRINER, H. I., F.R.C.S. Edin., NICHOLSON, H. W., M.B., B.Ch. Camb., COX, H. T., M.R.C.S., L.R.C.P. Lond., FARMER, A. P., M.R.C.S., L.R.C.P. Lond., NEILSON, D. F. A., F.R.C.S. Eng., WALFORD, A. S. H., M.B., B.Ch. Camb., F.R.C.S. Eng., PARKER, G. E., M.B., B.Ch. Camb., PURVIS, W. P., M.R.C.S., L.R.C.P. Lond., BARRON, H. T., M.D. Lond., MACKENNA, R. M. B., M.R.C.S., L.R.C.P. Lond., ARCHER, E. C., M.B., B.S. Lond., ADDISON, G. M., M.R.C.S., L.R.C.P. Lond., NICORY, C., M.R.C.S., L.R.C.P. Lond., BABINGTON, G. C., M.R.C.S., L.R.C.P. Lond., BOWEN, H. W., M.R.C.S., L.R.C.P. Lond., CAROTHERS, J. C. D., M.R.C.S., L.R.C.P. Lond., GOADBY, H. K., M.R.C.S., L.R.C.P. Lond., SHIRES, B., M.B., B.Ch. Edin., RICKMAN, J., M.D. Camb., COOPER, G. K., M.B., B.Ch. Camb., GEORGE, J. B., M.R.C.S., L.R.C.P. Lond., PHILLIPS, R. A., M.R.C.S., L.R.C.P. Lond., WALTON, L. H. F., M.R.C.S., L.R.C.P. Lond., BROCKMAN, E. P., M.B., M.Ch. Camb., MORRIS, J., M.B., B.Ch. Camb., PURCELL, F. W. F., M.R.C.S., L.R.C.P., Lond., TUCKETT, C. I., M.R.C.S., L.R.C.P. Lond., HENRY, G. R. N., M.R.C.S., L.R.C.P. Lond., MILLER, A. K., M.R.C.S., L.R.C.P. Lond., ROWAN, G. E., L.M.S.S.A., M.R.C.S., L.R.C.P. Lond., FITZGIBBON, G. M., M.R.C.S., L.R.C.P., Lond., DAVIES, T. E., M.B., B.Ch. Wales, TONKING, H. D., M.R.C.S., L.R.C.P. Lond., BURROWS, S. M., M.R.C.S., L.R.C.P. Lond., ASHTON, J. M., M.R.C.S., L.R.C.P. Lond., WRIGHT, E. M., M.B., B.Ch. Oxf., Chief Assistants and Clinical Assistants.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne Union.—Res. Asst. M.O. £250.

Barry Urban District Council, Accident and Surgical Hospital.—S. £750.

Birmingham University.—Professor of Physiology. £1000.

Bristol Mental Hospital.—Second Asst. M.O. £400.

Bristol Royal Infirmary.—H.P.'s., H.S.'s., Dental H.S., &c. Each at rate of £80.

Durham County Council.—Asst. Welfare M.O. £600.

East Riding Mental Hospital, Beverley.—Med. Supt. £900.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Asst. Path. At rate of £150. Also Asst. Phys., Mechano-therapeutic Dept. £100. Also Hon. P. to Children's Dept.

Evelina Hospital for Children, Southwark.—H.P. At rate of £120.

Holland (Lincs.) County Council.—Asst. M.O.H. £600.

Hull City Education Committee.—Asst. Sch. M.O. £600.

Lancashire County Council.—Asst. County M.O.'s. £800.

Lancashire County Mental Hospital, Winwick, Warrington.—Asst. M.O. £350.

Leeds City Tuberculosis Sanatorium, Killingbeck.—Asst. Res. M.O. £250.

Leicester Royal Infirmary.—H.S., and H.P. At rate of £125 and £120 respectively.

Leicestershire County Council.—Asst. County M.O. £750.

Liverpool Open-air Hospital for Children, Leasowe.—Jun. M.O. £200.

London Hospital, E.—First Asst. and Reg. £300.

Manchester, Ancoats Hospital.—Hon. Phys.

Manchester, Royal Children's Hospital Gartside-street.—Asst. M.O. At rate of £150. Also Res. Surg. O. At rate of £80.

National Hospital, Queen-square, W.C.—Res. M.O. £200.

Newcastle-upon-Tyne, Northumberland, Durham and Newcastle Eye Infirmary for Diseases of the Eye.—Hon. Surg.

Newcastle-upon-Tyne, Wooley Sanatorium, near Hexham.—Asst. M.O. £350.

Nottingham General Hospital.—H.P. At rate of £150.

Queen's Hospital for Children, Hackney-road, E.—Res. M.O. £200.

Royal Free Hospital, Gray's Inn-road, W.C.—H.P. to Children's Dept.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. At rate of £150.

Royal Westminster Ophthalmic Hospital, King William-street, W.C.—Asst. H.S.

St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Asst. Surg.

St. Thomas's Hospital.—Res. Asst. P. Also Med. Reg.

Smethwick County Borough.—Asst. M.O.H. and School M.O. £600.

South Shields County Borough.—Venereal Dis. M.O. £750.

Stoke-on-Trent, City of.—M.O.H. £1400.

Surrey, Redhill, Royal Earlswood Institution.—Jun. Asst. M.O. At rate of £250.

Swansea County Borough.—Asst. M.O. £600.

Sydney University, New South Wales.—Director of Cancer Research. £2000.

University College Hospital, Gower-street, W.C.—Harker Smith Reg. £250.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. Anæsthetist.

Watford Peace Memorial Hospital.—Res. M.O. At rate of £150.

West Bromwich County Borough.—Asst. M.O.H. £600.

West London Hospital, Hammersmith-road, W.—H.P. and two H.S.'s. Each at rate of £100. Also Hon. Med. Reg. £100.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. and Jun. Non-Res. H.S.'s. At rate of £150 and £100 respectively.

Westminster Hospital, S.W.—Second Asst. M.O. to X Ray and Electrical Dept.

Westminster Hospital School of Medicine.—Hon. Lecturer on Public Health.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Allendale, Northumberland.

Births, Marriages, and Deaths.

BIRTHS.

DAY.—On Feb. 7th, at Dacres-road, Forest Hill, S.E., the wife of Dr. H. B. Day (late of Cairo), of a son.

EAST.—On Feb. 7th, at Ferncroft-avenue, Hampstead, N.W., the wife of Dr. C. F. T. East, of a daughter.

WHITE-COOPER.—On Feb. 11th, at "Montagu," Dartmouth, Devon, the wife of W. R. White-Cooper, M.B., B.S. Lond., of a daughter.

MARRIAGES.

HODGSON—ROUND.—On Feb. 9th, at Old Edgbaston Church (by Rev. J. J. Bell, assisted by Canon Blofeld), Alfred Birkbeck Hodgson, M.B., M.R.C.P. Lond., younger son of late Canon Hodgson, of Aston, and Mrs. Hodgson, of 86, Trinity-road, Birchfields, to Margaret Anne, elder daughter of Mr. and Mrs. Harold Round, of "Hill Crest," St. James-road, Edgbaston. At Home: "Glencoe," Maney, Sutton Coldfield, March 25th, 26th, 27th.

DEATHS.

BEEVOR.—On Feb. 6th, suddenly, of heart failure, in London, Col. Walter Beevor, C.B., C.M.G., R.A.M.C.

FEGAN.—On Feb. 9th, in London, Richard Fegan, M.D., F.R.C.P.I., late of Blackheath and Old Charlton, Kent, in his 88th year.

GRANT.—On Feb. 10th, at Queen's-gate, S.W., Frederick Grant, M.D., M.R.C.S.

HARRISON.—On Feb. 7th, at Swan-walk, Chelsea, Charles Joseph Harrison, M.D.

MACCARTHY-MORROGH.—On Feb. 3rd, at his residence, Elkpa Lodge, Cork, Dr. Alexander MacCarthy-Morrogh, M.B., C.M., F.R.C.S.E., aged 62.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE INFLUENCE OF JOHN HUNTER UPON EARLY AMERICAN SURGERY.

Being the Hunterian Lecture delivered before the Hunterian Society at the Mansion House, London, on Jan. 17th, 1927,

BY JOHN M. T. FINNEY, M.D.,

PROFESSOR OF CLINICAL SURGERY AT JOHNS HOPKINS HOSPITAL, BALTIMORE; SOMETIME PRESIDENT OF THE AMERICAN COLLEGE OF SURGEONS AND CHIEF CONSULTANT IN SURGERY TO THE AMERICAN EXPEDITIONARY FORCE.

[Prof. Finney began by referring to the kinship, mutual interest, and common purpose which bind the two great English-speaking nations and went on to pay an eloquent tribute to the achievements of John Hunter, whom he described as the founder of modern scientific surgery. He proceeded as follows:—]

In order to comprehend more clearly the deep and lasting influence that Hunter and his pupils have exerted upon surgical thought and action in the United States of America it is necessary to have as a background some knowledge of the history and development of early American surgery.

There seems to be little definitely known, beyond their names, regarding those who practised medicine in the infancy of the colonies. What little is available, however, is of great interest, for those pioneers laid well the foundations for future medical progress in America. It is worthy of note that many of them seem to have been possessed of more than ordinary ability and advanced medical learning, such as it was in their day. In the various centres, of which Charleston, Philadelphia, New York, and Boston were perhaps the chief, and which, for 300 years, comprised practically all of the area occupied by the settlers, we find here and there individuals, some with medical degrees, chiefly from Edinburgh, but more without and with little or no special training, who were using their skill and the little medical knowledge they possessed, for the benefit of their fellows, with a surprising measure of success.

Since educated men among the colonists were at a premium, it was not uncommon to find several offices combined in the same individual, exhibiting a versatility unusual in this day. One of the most common combinations, especially in New England, perhaps, was that of clergyman and doctor. For instance, the earliest practitioner of medicine in Massachusetts was Samuel Fuller, one of the passengers on the *Mayflower* in 1620, and a deacon of the church at Plymouth, who is continually referred to in the ancient records as "surgeon of the settlement." Although he had no medical degree, he served as medical adviser to all the colonies about that part of Massachusetts Bay. The records contain abundant evidence to show that the good deacon exercised spiritual powers of no mean order, as well as skill in the management of physical ills, for, aided, no doubt, by prayer and the *vis medicatrix Naturæ*, it is related of him that he "met with great success in his practice."

The earlier records also contain instances of medical men attaining high rank in civil and political life. Several governors are numbered among them, of which perhaps the most conspicuous example is the younger Winthrop, who was Governor of Connecticut, a man of such distinguished scientific attainment as to have been one of the founders of the Royal Society. Three of the earlier presidents of Harvard University, and the first president of Princeton, were doctor-preachers.

In reviewing thus hastily the status of medicine in the American colonies in the seventeenth century, it should be borne in mind that they stretched in a narrow strip from what is now Florida to Massachusetts, bordered upon the one hand by the Atlantic Ocean, and on the other by the unexplored wilderness inhabited by wild men and wild beasts. They were a series of more or less isolated settlements, representing various nationalities and interests, with little or no cohesion; they were torn by political and religious strife, the communication between the various groups being irregular and difficult; their educational facilities were most meagre and undeveloped. In this period, while a few names stand out in the medical profession, a small but not insignificant beginning was made of medicine in the New World. It was all that could reasonably be expected, perhaps, considering the conditions which obtained at that time, and it served as a necessary basis for better things to come.

The Eighteenth Century.

The first half of the eighteenth century marked little advancement in American medicine. The reason for this may well have been the very unsettled social and political conditions in which the colonies still found themselves. Starting with Queen Anne's War, in 1702, wars and rumours of war with Spain, France, and their Indian neighbours, finally culminating in 1776 in the American Revolution, kept the colonists in such an agitated state of mind as to militate strongly against the development of scientific pursuits. Several significant influences, however, were beginning to make themselves felt. While everything medical yet remained provincial to a degree, and almost entire dependence was placed upon Europe for instruction and advancement along this line, still men were beginning to see that interchange of ideas was necessary for progress, and feeble attempts were apparent here and there to adapt old methods to new conditions.

The earlier American medical writings were of little merit and were largely descriptive in character, dealing with personal observation of new flora of the wilderness and their therapeutic properties, with reports of cases, or with personal experiences with epidemics, of which small-pox was the most deadly. Sydney Smith's caustic criticism with regard to the character and number of American medical contributions up to this time was, unfortunately, quite pertinent. The name of one man stands out as perhaps the most prominent in the earlier years of the century, that of Zabdiel Boylston, of Boston. He was the son of Dr. Thomas Boylston, an Englishman with an Oxford degree, who had come out in 1635. The younger Boylston studied medicine with his father, as it was before the days of colonial medical schools. He is noted chiefly for the brave stand that he took in the controversy over inoculation for small-pox. He had the courage to inoculate, in 1721, his own son, a lad of 13, and two of his house servants. This occurrence took place just six weeks after Lady Mary Wortley Montague's famous inoculation séance and, of course, in entire ignorance of it. For this he suffered severe persecution for a time, but finally triumphed after demonstrating to both the profession and the laity the great value of inoculation. Subsequently he was officially invited to come to London to demonstrate his method. Here he was received by Royalty, and was made a member of the Royal Society—the first native American to be so honoured.

Pioneers of Medical Education in America.

But the eighteenth century in its second generation produced another group of half a dozen medical men of sufficient note to warrant brief mention. These all, with a single exception, Thomas Cadwallader, of Philadelphia, came from the south, of which at that time Charleston was the social and commercial centre. Cadwallader was educated abroad and was a pupil of Cheselden. On his return from London, as was so frequently done by those who, like himself, had had the benefit of foreign study, he established a class in practical anatomy and dissection. He appreciated the value of adequate medical education and was among the first to advocate the establishment of a medical school in the colonies. The other five, all Scotsmen, with one exception, were John Lining, John Moultrie, Lionel Chalmers, Alexander Garden, and William Bull, the last named being American born. These men were all of a type which would have left its impress anywhere. Educated chiefly in Edinburgh, they were among the first to transplant Old World ideas and ideals to the New. They introduced the European culture and scientific point of view that was to be a little later brought over in greater volume by the continually increasing number of young, native-born, but foreign-taught, Americans. Heretofore, the only local medical training available had been through men educated in foreign countries, who had come out either as colonists or as army surgeons, and had remained permanently. This crude haphazard method sufficed for a time, until the founding of Harvard in 1636, and the other colleges thereafter in fairly rapid succession. The young men educated there, with higher ideals, were not satisfied with a picked-up (so to speak) medical course. They looked, therefore, across the sea to the centres where adequate instruction was to be found.

It has been noted with some surprise, by historians of the colonial period in America, that medicine, as a separate branch of education, had received so little consideration during the first century after the settlement of the country. While, as is characteristic of English colonisation everywhere, the school-house had accompanied the pioneer, and institutions of learning more or less advanced had been early established, yet it was not until after the first half of the eighteenth century had passed that any attempt had been made to establish a medical college, and up to the time of the Revolution less than half a hundred young men had been graduated therefrom. It will at once be evident that many causes were active in bringing about this condition of affairs. The chief of these, perhaps, was the backward state of the profession everywhere, even in Europe. In the new colonies the hardy pioneer stood less in need of medical attention than others less actively engaged. Little opportunity was offered to the medical man for either fame or

fortune in the practice of his profession in the sparsely settled colonies. The colonists themselves, as has already been indicated, were so actively engaged in the struggle for existence, and in securing the bare necessities of life—surrounded as they were by unfriendly natives and equally unfriendly neighbours—that little time was left for the consideration of medical education.

The Psalmist's conception of "the pestilence that walketh in darkness and the arrow that flieth by day" was to the poor harassed colonist no mere figure of speech but a stern reality. The ravages of the oft-recurring pestilences—small-pox, yellow fever, malaria, diphtheria, &c.—were far deadlier than the Red Man's arrows or the bullets of the French. The pages of fiction contain nothing more thrilling than the exploits of such sterling characters as the pioneers and pathfinders of those early days, many of whom were doctors: Ephraim McDowell, Benjamin Dudley, Nathan Smith, Daniel Drake, and hosts of others whose names are known to posterity, or unknown, as the case may be. What could be more tragic than the melancholy records of the many and varied pestilences that, from time to time, sweeping over the different settlements with irresistible fury, wiped many of them completely out of existence? What could be more sublime than the courage and the fortitude with which those early settlers, with dogged determination, stood up against oft-recurring dangers, difficulties, and disaster that would have terrified and utterly discouraged hearts cast in a less heroic mould?

The Philadelphia Medical College and its Founders.

During the latter half of the eighteenth century a new era began to dawn on the medical profession in the colonies. Young men graduated in the arts in the young American colleges; men of real ability and filled with scientific enthusiasm, began to flock to Europe in considerable numbers; and after receiving the best training that her institutions afforded and experiencing the stimulating influence of her great teachers returned to practise their profession in the New World. Then began the forward movement in medical education and practical achievement which has characterised the American school of medicine down to the present day.

In 1762, William Shippen, jun., one of these young educated Americans just mentioned, returned to his native city, Philadelphia, where he was joined three years later by John Morgan, also just returned from a season of foreign study. Morgan, like Shippen, had enjoyed the privilege of working under John Hunter for an extended period. Both had been resident students in his household and both had taken their medical degrees at Edinburgh, spending five years each in foreign study. Shortly after his return, Morgan delivered a public lecture on the Institution of Medical Schools in America. This lecture so impressed the trustees of the University of Pennsylvania that they at once decided to establish a medical department, and asked Morgan to take the chair of medicine and Shippen that of surgery. A few months later Adam Kuhn and Benjamin Rush, both educated abroad, were added to the faculty. Thus was established in 1765 the first school of medicine in America, with its founder, John Morgan, and its first professor of surgery, William Shippen, jun., both former pupils of and confessedly much influenced by their common teacher, John Hunter. To Shippen belongs the credit for having first suggested to Morgan the idea of a medical school, though it was the latter who was chiefly instrumental in bringing about its final consummation.

Shippen and the Hunter Household.

William Shippen, jun., one of the founders and first professor of surgery and anatomy in the Philadelphia Medical College, took his A.B. degree at Princeton. He then studied for a season in his father's office in Philadelphia. Later he went to London and became a pupil of the Hunters.

Through the kindness of my friend, Dr. J. Hall Pleasants, of Baltimore I have had the opportunity to examine, in the original, his diary, written while a member of the Hunter household. The first reference in the diary to his association with Mr. Hunter is that of Monday, Oct. 1st, 1759: "Busy in packing my things for Mr. Hunter's. In the evening attended Dr. Hunter's first lecture . . . Tuesday, 2nd: Moved my trunk to Mr. Hunter's . . . Dr. Hunter's lecture at 5 till 7.30. Wednesday, 3rd: . . . at 5 Dr. Hunter's lecture. Lay for the first night at Mr. Hunter's." From this on there is a daily note as to how he occupied his time. It was mostly spent in the dissecting room. For instance, on Oct. 6th: "Spent the day in the dissecting room till 5. Dr. Hunter's lecture till 7.30. Bed at 10.30 talking anatomy with Mr. Hunter from supper." It will be observed that distinction is made between "Doctor" and "Mr." Hunter. This is noted throughout the diary. On the 16th: "Dissected till 5. Lecture till 7.30. Chatted till 10 with Mr. Hunter upon anatomical points. Bedded at 10.30." On the 25th: "At home all day dissecting and injecting. Lecture at 5 till 7. Read Pott on the fistula lachrymalis till 11. Bed."

That his time, however, was not spent wholly in dissecting and injecting and discussing anatomy with Mr. Hunter is shown by numerous references to visits to the theatre, dances, and other diversions. For instance, one entry states, after a busy day: "Attended a new farce, entitled 'High Life Below Stairs'; very good and appropriate to the times." On Nov. 7th this entry: "Rose at 7. Mr. Hunter dissecting muscles for lecture. Went to see patient under my care. After lecture went to St. Bartholomew's Hospital and saw the neatest operation for bubonocele that I ever saw, by Mr. Pott, a very clever, neat surgeon." A characteristically American comment by an embryo surgeon upon the work of a master. On the 16th: "Dissected all the remainder of the day. Lecture at 5 till 6. Talked anatomically with J. Hunter. Bed at 10." This entry, "dissected all day," appears very constantly in the diary. Evidently Mr. Hunter kept his pupils busily occupied. On the 13th (December): "Waited upon Mr. Hunter while he injected a body for blood-vessels." Tuesday, the 18th: "Dissected all day. Lecture at four. Went to a ball in city after lecture, danced with Miss Knox, an agreeable lady and good dancer. Thirty-five ladies genteelly dressed. Bed at two." One wonders what his comment on present-day styles of feminine attire would have been! Saturday, the 22nd: Evening at home with Mr. Hunter who generally lives out of town." The diary contains much that is of interest, but these extracts will suffice to show the general character of its contents.

A Liberal Education.

Very soon after his return from Europe Shippen began his course of lectures in anatomy, which was the beginning of the Medical Department of the University of Pennsylvania. Two degrees were offered by this first School of Medicine, the Bachelor's and the Doctor's Degree in Physic. The first class, consisting of ten men, received the Bachelor's Degree on June 21st, 1768. In a circular prepared by John Morgan, the founder, after describing the requirements necessary for the two degrees, he goes on to say: "The above scheme of a medical education is upon as extensive and liberal a plan as in any of the most respectable European seminaries, and the utmost care is taken to render the degrees real marks of honor and distinguished learning and ability." He significantly adds: "A good medical education is here looked upon as not the least useful part of science." We cannot but admire the spirit exhibited by these eager and enthusiastic young men and their courage and foresight in planning upon such broad and liberal lines the infant institution founded by them, as shown in the requirement of a previous liberal education before undertaking the study of medicine, and the establishment of a curriculum of medical study comparing favourably with that of the Old World institutions. It was patterned largely after Edinburgh, of which both founders were graduates.

Morgan had attained great prominence as a medical teacher when the Medical School was forced, by the outbreak of the War of the Revolution, to close its doors. He then became director-general and chief physician of the American Army on Washington's staff. During his rather short and active life he was a power in medical circles in the colonies, but he was not interested in surgery and contributed nothing to it, so he drops out of our story.

Later Medical Schools.

In 1767, two years after the establishment of the Philadelphia School, a second school of medicine was organised in New York. Samuel Bard was the leader in the foundation of the Medical School of King's College, the forerunner of the College of Physicians and Surgeons, now Columbia University, and was its first professor of the theory and practice of physic. Among others associated with him in this enterprise were John Jones and Peter Middleton, of whom we shall have more to say later. Bard was second only to Benjamin Rush in distinction among American physicians of his day, and stands in the same paternal relation to the establishment of the first medical school in New York, that Morgan and Shippen do to that founded two years earlier in Philadelphia. A full medical faculty of six professors was named, and the first course of lectures given in 1768–69, at the end of which the Degree of Bachelor of Medicine was given to two young men, and in the following year the degree of M.D., the first time that this degree was awarded in America.

Reference should also be made to Harvard Medical School and its founder, John Warren. While Warren did not enjoy the advantages of a foreign education and training, still, as stated by Mumford, he undoubtedly belongs, as does his more famous son, in that group of American surgeons who received their inspiration from John Hunter. After the close of the Revolutionary War, in which he had served with distinction as a hospital surgeon, he began a course of lectures which gradually developed into the Medical

Department of Harvard University, which was founded in 1783. He served as professor of anatomy and surgery until his death in 1815.

In speaking of the founding of medical schools in the United States mention should be made of that most extraordinary personality, one of the most interesting in the surgical annals of the country—namely, Nathan Smith, the exemplar par excellence of the peripatetic medical professors, in which, for a season during their early development, the medical schools of America abounded. He graduated in medicine from Harvard University in 1790, and eight years thereafter, in 1798, he founded Dartmouth Medical School, where for more than a dozen years he was the entire faculty, teaching all branches and occupying what Oliver Wendell Holmes has facetiously described as "not a chair, but a whole settee of professorships." In 1813 he left Dartmouth to establish the Medical Department of Yale College in New Haven, where he filled the chair of surgery. Later on he founded two other medical schools, one in Vermont, the other in Maine. As this brief history would indicate, Nathan Smith was a most interesting and many-sided personality, an all-round specialist, a pioneer investigator and writer along various lines, both medical and surgical, as witness his description of typhoid fever, pronounced a classic by Sir William Osler, and his performance of ovariotomy, independently of, and a few years later than, Ephraim McDowell. His studies in the pathology of necrosis of bone, the principles established by him in the use of certain apparatus for the treatment of fractures, and his studies in dislocation of the hip, all stamp him as an original thinker and a surgeon of ability. Throughout a long life he was a consistent exponent of the best Hunterian traditions.

Influential Helpers.

It is interesting to note the very important part played by Benjamin Franklin in establishing the first medical school in the colonies. It was largely due to his timely assistance and constant encouragement at a time when they were sorely needed that medical education was really begun in the States. Acknowledgment should also be made of the invaluable aid and support, both material and moral, rendered these infant medical schools by the celebrated Dr. John Fothergill and his successor, John Lettsom, whose interest, in the first place, was enlisted through the Society of Friends, of which both were members, and to which so large a portion of the early colonists, especially in Pennsylvania, also belonged. Fothergill was the adviser of both Morgan and Bard in planning the Philadelphia and New York schools. He was a generous contributor to both, and one of the incorporators of the latter. He it was who, upon the founding in 1763 of the first medical library, that in connexion with the Philadelphia Hospital, presented to it the first book, a volume on Materia Medica.

Up to this time the majority of American medical students had gone to Edinburgh for their medical degrees, attracted thither by the fame of the great teachers comprising the faculty at that time—Cullen, the Munros, with Black, Whytte, Bell, and others. The most of these students also spent some time in London, largely attracted by the fame of Pott, Baillie, the Hunters and their school, and others. It is very difficult to estimate, with any degree of exactness, the relative influence of these two centres upon the thought and practice of the American students. Both influences were very potent no doubt upon the receptive minds of the eager young colonists. Certain it is that, in reading the letters written by many of them while enjoying the advantages that these great centres offered, one is struck by the enthusiasm and devotion inspired by their teachers.

(To be concluded.)

GEORGIUS BUCHANANUS SCOTUS.

THE human boy has a feeling of unmixed satisfaction when he has the chance of observing the dethronement of some idol which has been held as a pattern before his sinful eyes by those set in authority over him. The adult joy in a corresponding situation is tempered by some sad regret at the passing of what he once held as sacrosanct. Something of this feeling is produced by the latest investigations of the claims of mementos of the famous George Buchanan, whose portrait in the Senate Hall, and skull in the University Library, bear testimony to the respect and admiration given to him by his fellow-countrymen. Prof. Karl Pearson, when he gave the fifth Henderson Trust Lecture last June, attacked the authenticity of one or both of these presentments of the great scholar in the temple of his fame. His lecture[1] deals with the known portraits, and shows us that the long, dour, and rather fanatical face of the Scottish ideal is less likely to represent the actual man, as he was, than the more human face of the Royal Society portrait. The difference appears to be that between Cato and Catullus, as Prof. Pearson expresses it, and we seem forced to admit that the Edinburgh portrait is rather what he ought to have been—to be in keeping with the halo—than what it is possible he may really have been in his moments of relaxation. According to Prof. Pearson's well-ordered argument, either the skull or the Edinburgh portrait is not that of the famous George Buchanan. This interesting exposition of the application of anthropological artistic criticism deserves study.

[1] On the Skull and Portraits of George Buchanan. Published in Biometrika Nov, 1926, and separately by: Oliver and Boyd. Edinburgh. 6*d*.

NEW PREPARATIONS.

Messrs. Burroughs Wellcome and Co. state that they now supply their brand of insulin in the strength of 200 units in 5 c.cm. as well as in the regular strength of 100 units in 5 c.cm. To avoid the possibility of overdosage the more concentrated preparation is issued with a label and in a carton of distinctive colour.

The British Drug Houses, Ltd., announce that they are in a position to supply to any medical men who wish to make a clinical trial of activated ergosterol a solution of 0·1 per cent. of crystalline ergosterol which has been activated by irradiation under carefully controlled conditions. In THE LANCET of Feb. 5th, 1927, Rosenheim and Webster, discussing the nature of the parent substance of vitamin D, showed that when ergosterol is subjected to ultra-violet irradiation photochemical action results in the formation of a substance which has extraordinarily potent antirachitic properties, and that probably less than one-thousandth of a milligramme of it per diem suffices to cure rickets in a rat. The manufacturers state that so far as can be foretold, this solution may be expected to possess 20–50 times the antirachitic activity of cod-liver oil; thus, from ½ to 1 c.cm. should prove an effective daily dose. A bottle of this solution will be sent without charge to any registered medical practitioner who may apply for it.

THE PAINLESS DESTRUCTION OF ANIMALS.

THE manageress of Our Dumb Friends' League Home for Cats and Dogs at Bedford was convicted last week of causing unnecessary suffering to a cat which had been sent by its owner for painless destruction. The Royal Society for the Prevention of Cruelty to Animals undertook the prosecution. The lady to whom the cat had belonged gave evidence to the effect that about a week after she had sent the animal to the home to be destroyed in the lethal chamber it reappeared in her garden, about one and a half miles away, in an extremely weak condition and died before she could carry it indoors. The defendant stated that when she took the cat out of the lethal chamber it appeared to be dead. In cross-examination she said she did not notice the time at which the cat went into and came out of the box. It was urged on her behalf that it was a case of error of judgment rather than an act of deliberate cruelty. The magistrates fined the defendant £3 with £4 7*s*. costs, the chairman remarking that there was a lack of various precautions which would have prevented the terrible suffering which the cat underwent. He added that the arrangements for the destruction of animals at this home needed more careful regulation.

If such incidents are repeated public opinion is likely to insist upon the registration, licensing, and inspection of institutions—other than those under the charge of a veterinary surgeon—which undertake the painless destruction of animals.

"CIRCULARS."

To the Editor of THE LANCET.

SIR,—In common, I suppose, with others in general practice, I frequently receive in the form of pamphlets reprints of articles by specialists. When these are from authors with whom I have had professional dealings I am always glad to receive and read them; or when they are evidently distributed, not by the author himself but by some impersonal body, such as a learned society or more often, by an association founded for the promotion of public welfare, these, too, are acceptable enough.

But I wish to protest against the growing habit, favoured by a certain type of specialists, of disseminating broadcast reprints of their articles to general practitioners with whom they have had no previous relations. In these circumstances such pamphlets appear to be attempts at auto-advertisement, indistinguishable from the methods of the tradesman touting for orders.

The general practitioner would be wise to treat them as "circulars," merely noting the names of the authors so that their services may be eschewed in the future. If the General Medical Council desires to investigate this form of professional advertising, and requires material for that purpose, the contents of my waste-paper basket are always at their disposal.

I am, Sir, yours faithfully,

C. WILLETT CUNNINGTON.

Dollis-avenue, Church End, Finchley, N., Jan. 30th, 1927.